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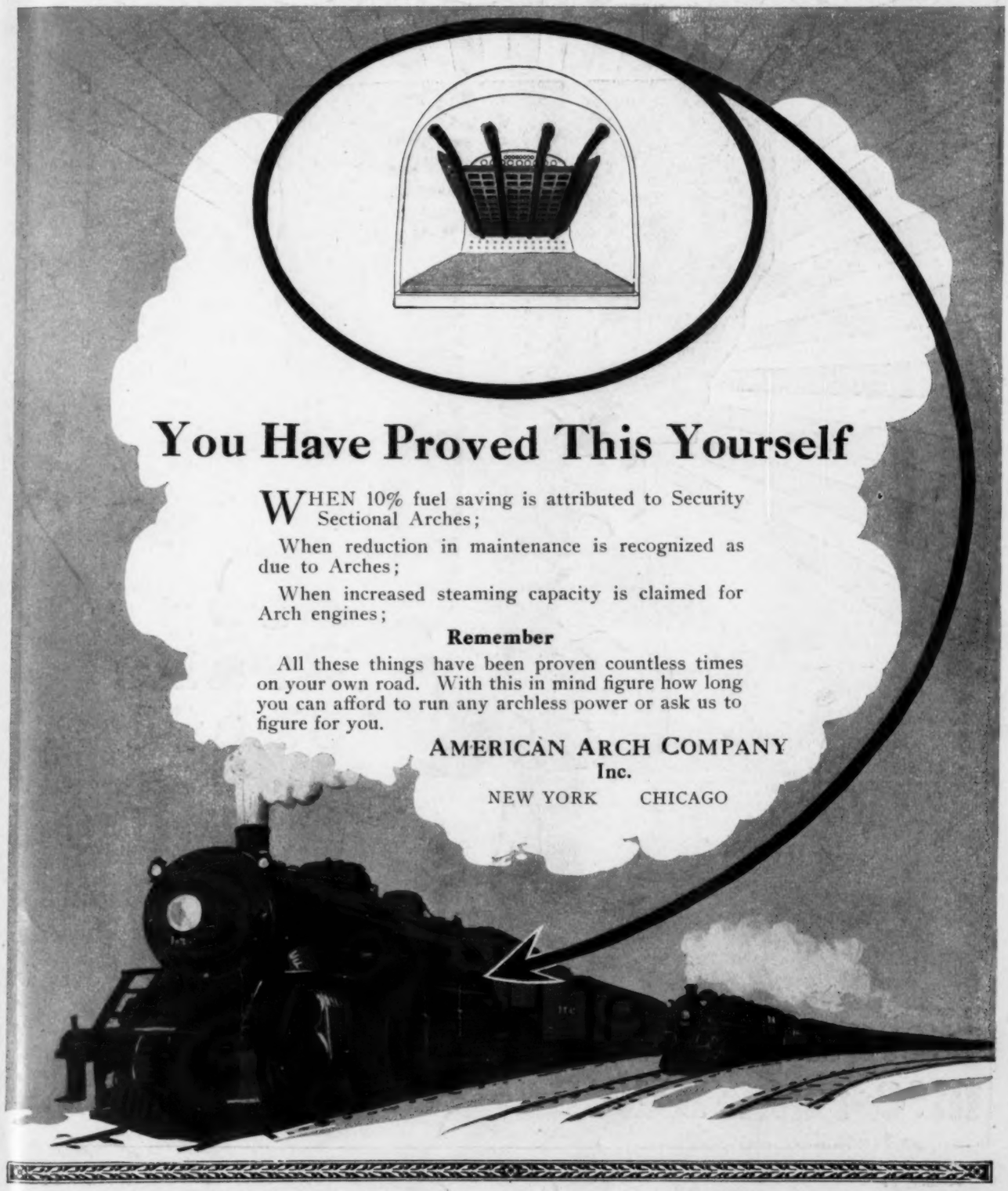
Railway Age

SECOND HALF OF 1924—No. 14 NEW YORK—OCTOBER 4, 1924—CHICAGO SIXTY-EIGHTH YEAR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WHEN 10% fuel saving is attributed to Security Sectional Arches;
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When increased steaming capacity is claimed for Arch engines;
Remember
All these things have been proven countless times on your own road. With this in mind figure how long you can afford to run any archless power or ask us to figure for you.
AMERICAN ARCH COMPANY
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NEW YORK CHICAGO

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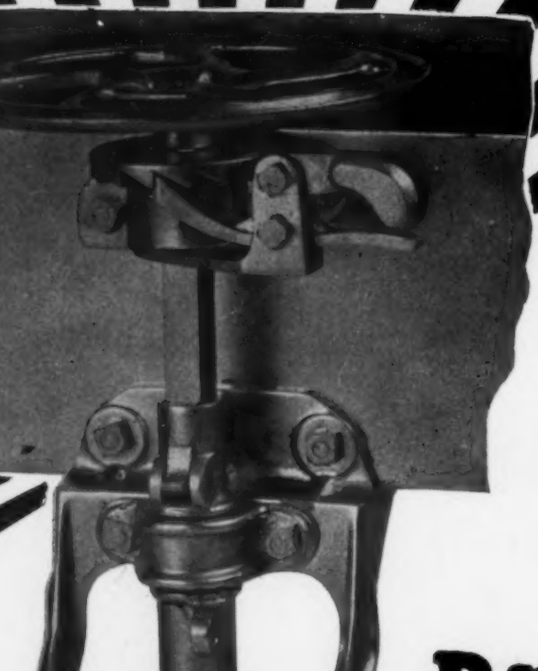

Drop
Brake
Shaft

Union Railway Equipment Co.
McCormick Bldg. Chicago

Volume 77 Number 14

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EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Further Increase in Car Loadings

Without any strain on the transportation machine the railways probably, at the present time, are loading and moving more freight cars each week than ever before in history. The number of cars loaded in the week ended September 20 was 1,076,553. This was 15,742 more than in the corresponding week of 1923 and only two per cent less than the record figure of 1,097,274 which was reached in the last week of September, 1923. The record of cars loaded made in the week ended September 20 this year was never equalled before 1923 and was exceeded in only four weeks of last year. Total loadings increased almost 151,000 cars a week between the fourth week in July and the third week in September. There is no reason to doubt there has been a further increase since then. In spite of the big increase in loadings the railways on September 14 had a surplus of more than 167,000 cars. This was a decline, however, from more than 322,000 surplus cars at the end of July. They can still handle a substantially larger business without car shortage if weather conditions remain good. If, however, traffic demands should continue to increase and severe weather should come, it is by no means inconceivable that there would be a "car shortage" in the late fall or early winter. There is no imminent danger of a car shortage but it is not too early to begin a campaign to get shippers to load cars heavier. The average loading of cars recently has not been as heavy as it should be and to make sure there will be no shortage of cars the average loading should be increased.

What a Man Out of a Job Thinks About

A survey on unemployment recently completed by the Russell Sage Foundation arrives at an estimate of 10 or 12 per cent as the proportion of workers in the United States who are idle all the time. This 10 or 12 per cent is the average for good years and bad; the figure drops much lower in good years and rises much higher in bad. The question to be considered is—its portrayal is worthy of the skill of the famous cartoonist who popularized the phrase—"What does the unemployed worker think about?" Is his mind filled with feelings of brotherly love toward his fellow-countrymen, of patriotism and respect for existing institutions or, on the other hand, is he inclined to be interested in little else than his own condition and to lend an attentive ear to the propounder of any fanciful political scheme which holds out promises of bettering his condition? This question is one which could only be answered by an extensive survey such as the Russell Sage Foundation has conducted into the subject of unemployment proper. It seems, however, reasonably safe to conjecture that the attitude of most unemployed workers is not one which those favoring orderly progress in our industrial institutions can look at with unconcern. We know, for example, that the membership of the largest and most violent communistic union in the country is largely recruited from the ranks of casual workers. We know also that the Marxian philosophy makes a direct appeal to the unemployed by its emphasis on the notion of the reservoir of unemployed as the condition which makes capitalistic industry possible. The efforts being put forth by the Association of Railway Executives to minimize unemployment in the railway industry are, therefore, most commendable from the point of view of all classes of people except those who prosper from discontent. The foresight shown is all the more praiseworthy because the problem at the present time is not particularly pressing. The time to ward off unemployment, however, is before it begins. As was pointed out in the editorial entitled "Stabilizing Railway Employment" in our issue of September 27, the executives themselves cannot solve this problem alone. Most of all they must have the co-operation of regulatory bodies, particularly the Interstate Commerce Commission. In addition to this, however, the interest and activity of other railway officers would be distinctly helpful. To every forward-looking railroad man, therefore, who wishes to keep abreast with the major movements in the field we recommend a close study of this problem and the developments in its solution which must soon come. It must be solved!

"See Europe Second"

On October 3 a party of passenger traffic officers of American railways left New York for a short European tour. On this trip they will be the guests of the trans-Atlantic steamship companies and some of the European railways The courtesy of the steamship lines and the European roads in offering this opportunity to the traffic officers is not, of course, entirely disinterested, yet it is none the less praiseworthy for that. The new immigration law has hit the steamship lines rather hard. Where formerly they filled their passenger accommodations to capacity on almost every trip, now many vessels are operating with very little traffic, especially in the third class. The situation is serious and, if the shipping companies were not headed by resourceful men, the outlook would be discouraging indeed. But such is not the case. This summer several lines remodeled the third-class quarters on some of their vessels, removed from them the stigma of "steerage" and made a strenuous effort to fill them with tourists—people of limited means who could not afford the higher priced quarters but who were of sufficient refinement not to care to be herded into the steerage with immigrants. The plan was most successful. Thousands of people visited Europe this summer who otherwise would not have been able to do so and the steamship companies filled the third-class quarters on their vessels which would otherwise have had little or no traffic. This action showed business initiative of the most admirable type—bringing benefits to the public and the companies alike. That the companies, however, have not exhausted their resourcefulness is shown by their latest move—the invitation of the American passenger traffic officers to visit Europe as their guests. The American traffic officers cannot, of course, be expected to relinquish the slogan "See America First," but, since for most Americans a voyage to Europe involves a long railroad ride in America as well, there probably would be no objection to saying "See Europe Second." This, it may be predicted, will probably be the viewpoint which the passenger traffic officers will adopt when they return from Europe. Such co-operation with the steamship companies would be a well-merited return for the courtesy they have shown.

Are They Ignorant or Just Plain Liars?

THE MOST EXTRAORDINARY THING about the advocates of government ownership and socialism, or at least the more prominent of them, is the way they resort to misrepresentation. We do not know whether this misrepresentation is due to ignorance, or is just plain lying. We do know, however, that there practically never emanates from any advocate of government ownership of railways a statement about the results of either government or private operation which is not largely or wholly false. If these wild misstatements are due to ignorance, it is evident that those who make them are extremely unsafe leaders for the people to follow. If they are deliberate falsehoods, they reflect most unfavorably both upon those from whom they emanate and the cause they advocate.

We will cite just a few examples of the misrepresentations that are being disseminated by these men in the present political campaign.

Senator Brookhart is rampaging up and down Iowa telling the people that the cost of railway transportation could be reduced $1,300,000,000 a year without reducing the wages of a single employee. He is saying this, of course, because he wants the votes both of those who pay rates and of employees who receive wages. In support of this statement he says the operating expenses of the railways were increased 1,485 million dollars in the first ten months after they were returned to private operation. This statement is not true. The increase in expenses in the first ten months of private operation was nowhere near this amount. Then he adds, "Only 480 million dollars of this increase is wages. The balance was waste of competition and graft of every kind known to the science of art and grafting."

In the year 1920, during the first two months of which the railways were still operated by the government, operating expenses were 1,428 million dollars greater than in the year 1919. One hundred and forty-seven million dollars of this increase occurred in January and February when the government was still operating the railways. Therefore, before the roads were returned to private management their operating expenses already had been increased at the rate of $2,450,000 a day, or about 900 million dollars a year, over those of 1919. Now, how much larger was the total pay roll of the railways in 1920 than in 1919? It was 780 million dollars larger, an increase of 300 million dollars greater than Senator Brookhart says.

Most of the remainder of the increase in operating expenses in 1920 the great Senator attributes to alleged "graft" through subsidiary companies. It is true the railways did, in 1920, charge into their operating accounts 365 million dollars more for materials and supplies than they did in 1919. But most of the materials and supplies charged into the accounts in 1920 were bought by the Railroad Administration before the railways were returned to private operation. Furthermore in 1919, when the government was still operating the railways, the total amount charged into the accounts for materials and supplies was 390 million dollars more than it was in 1917 under private operation. The great Iowa Senator is an advocate of government ownership and a defender of the results of government operation. How, then, does he explain this large increase in the cost of materials and supplies under government operation? He does not explain it. He ignores it.

Furthermore, he completely ignores the fact that while, in 1920, operating expenses were largely increased, in 1921 and 1922 they were greatly reduced. They were reduced so much that if the average hourly and daily wage paid to employees had not been greater than in 1919, the total operating expenses would have been less in both years than in 1919. If the Senator knows that under private operation in these two years the expenses, except for higher wages, were actually less than in 1919, how, on his theory that the expenses were increased chiefly by graft in 1920, does he explain the great reduction in them subsequently? He does not explain it. He leaves the Iowa farmers with the impression that expenses were greatly increased after the railways were returned to their owners and have never been reduced, although they are now about $2,400,000 a day less than they were at the termination of government operation.

Another fine example of the misrepresentations to which men of this class resort is afforded by statements made in the La Follette-Wheeler hand book. It is asserted therein that in 1920 freight rates were advanced $1,500,000,000. This statement is not true. The total advance in all rates, including passenger rates, was almost this large, but the advance in freight rates was about a quarter of a billion dollars less than stated. It is then added that for each of the twenty million families in the country this advance in freight rates has "meant a burden of $75 a year" during each of the last four years.

This statement is false in every particular. First, the advance in rates was made to stop the incurring of a railway deficit which exceeded the advance in rates granted and, therefore, the advance in rates did not increase, but actually reduced, the total cost of transportation to the public. Second, the Census Bureau says there are over twenty-five million families in the country and, therefore, the cost of transportation is divided among one-fourth more families than the La Follette-Wheeler hand book says. Third, more than one-half of the advance in freight rates granted by the commission in 1920 was wiped out by reductions made by the commission in 1922. The reckless disregard of truth shown by those who are running La Follette's campaign is illustrated by the fact that they try to give the public the impression that the entire advance in rates made in 1920 is still in effect.

The La Follette-Wheeler hand book adopts the theory that an advance in freight rates increases the cost of living three-fold as much as the advance in rates. It, therefore, tells the people that the advance in rates made in 1920 has increased the average cost of living per family $225 annually, or a total of $900 within the last four years. But government reports show that the cost of living reached its peak before the advance in rates was made in 1920, and declined 40 per cent within a year after the rates were advanced and 47 per cent within two years after they were advanced.

In other words, every single statement made in the La Follette hand book regarding the amount of the advance in freight rates and the effect of it is easily disproved by government statistics. Of what stuff is made the consciences and brains of men who will disseminate broadcast such misrepresentations?

These men are also disseminating widely statements they must know to be false regarding the results of government ownership in Canada. They assert in their handbook that in 1923 the government owned Canadian National Railways had an "operating surplus" of $20,236,563. A government ownership newspaper in California goes them one better. It asserts that the Canadian National Railways under government operation earned dividends of 7 per cent and paid off a large indebtedness from earnings. The official report of the Canadian National Railways shows that in 1923, after paying all expenses and fixed charges, it had a "net income deficit" of $51,696,695. Furthermore, this does not include any allowance for interest upon the investment in a large part of the properties. Sir Henry Thornton, president of the Canadian National Railways, has made an excellent record in improving their financial results since he took charge of their management. Sir Henry, however, has in a newspaper interview protested against such misrepre-

sentations of the results of government ownership in Canada being used to bolster up the cause of public ownership in the United States.

What must people think of the intellect and character of men who will constantly resort to such misrepresentations? What must they think of a cause that needs such misrepresentations to bolster it up? Is it possible the facts bearing upon the question of private versus government ownership of railways are such that a man cannot advocate the latter policy without being either an ignoramus or a liar? Certainly the record these men are making suggests that conclusion.

September Equipment Orders Reach Total of $60,000,000

THE PENNSYLVANIA order for 10,000 freight cars placed during the first week of September proved to be the forerunner of other large orders. A buying movement was begun that still continues in undiminished volume. This buying movement has been represented thus far —up to the end of September—by orders for no less than 22,520 freight cars, and there are pending at present orders for approximately an additional 30,000 cars. Orders were placed during September for 101 locomotives. Passenger train car orders in September totaled 250, all of which were express refrigerator cars; considerable passenger car business is at present pending. The increasing popularity of the gasoline rail-motor car is evidenced by purchases in September of 22 of this type.

The railway equipment orders placed during September will, at a conservative estimate, have a total value in round figures of approximately $60,000,000. This figure is obtained by giving the locomotives an average value of $60,000, or a total value of the 101 ordered of not less than $6,000,000. The freight cars are estimated to cost $2,300, making a total of $51,796,000 for the 22,520 reported during the month. The 250 express refrigerator cars presumably cost not less than $3,500 each, or a total of $875,000, and the 22 gasoline rail-motor cars, estimated conservatively at $20,000 each, cost $440,000. This makes a total of $59,111,000, which is increased to considerably over the $60,000,000 above noted by various orders for steel underframes which were placed during the month but which are not included in the tabulation of cars ordered.

DOMESTIC ORDERS

Month	Locomotives	Freight cars	Passenger cars
January	125	6,020	29
February	85	18,365	293
March	283	35,846	237
April	100	11,189	131
May	107	435	101
June	1	387	31
July	83	533	149
August	8	4,751	164
September	101	22,520	250
Total 9 months	893	100,046	1,385
1923—9 months	1,764	71,486	1,475
1922—9 months	1,672	111,160	1,437

The size of the $60,000,000 figure indicates how fast a buying movement of this kind can run into large sums of money. The striking feature is, of course, that practically none of the business placed during the month was "in sight" when the month began. The Pennsylvania order was placed with unusually short notice, and the buying movement which it started similarly followed with unusual rapidity. It is the consensus of opinion that the explanation of the situation is to be found in the unusually favorable prices that were offered. The promise of prompt deliveries must also have been an important factor.

Freight car orders for the year to the end of September have now reached a total of 100,046, which compares with a total for the first nine months of 1923 of 71,486. The nine months of 1924 total is already in excess also of the total for all of last year, which was 94,471. It is less, however, than the total for the first nine months of 1922, which was 111,160.

The nine months' orders for locomotives have totaled 893. This is only about one-half the total reported for the first nine months of 1923, which was 1,764 and slightly over one-half the total of 1,672 for the first nine months of 1922. The orders for locomotives placed in September represented only about one-half month's production. The locomotive builders are now pretty well caught up on the orders at present on their books.

Passenger car orders are holding up unusually well. The total for the first nine months of 1924 was 1,385, which compared with 1,475 in the first nine months of 1923 and with 1,437 in the first nine months of 1922. These figures do not include gasoline rail-motor cars.

The freight car orders that were placed during September were for railroads in all parts of the country. The largest order was, of course, that for the Pennsylvania, which totaled 10,000 cars. Other large orders included the Chesapeake & Ohio, 1,000; the Illinois Central, 6,200; the Texas & Pacific, 2,000; the Norfolk & Western, 1,000 and the Reading Company, 2,000 (since increased to 3,000).

Freight car orders pending at the end of the month included the St. Louis Southwestern, 1,000; the Southern Railway, 3,000; the Gulf Coast Lines, 1,250; the Great Northern, 2,500; the Chicago, Burlington & Quincy, 3,000. The Southern Railway and Gulf Coast Line orders have since been placed. Reports are to the effect that the Baltimore & Ohio will come in the market for 8,000 cars, the Atlantic Coast Line for 3,000, the Atchison, Topeka & Santa Fe for 6,000 and possibly the New York Central for 7,500 or 10,000. The receiver of the Minneapolis & St. Louis is seeking authority to purchase 1,800 cars.

The important locomotive orders during September were those placed by the Illinois Central for 35 and by the Missouri Pacific for 50. The most important order at present pending is that for 50 for the Southern Railway. The Minneapolis & St. Louis may soon be in the market for 10 locomotives. During September 200 express refrigerator cars were ordered by the Illinois Central and 50 by the Missouri Pacific. Important passenger car orders at present pending include 278 for the Illinois Central, 13 for the Texas & Pacific, 38 for the Southern Railway and possibly 10 for the Minneapolis & St. Louis.

The summer was characterized by a period of watchful waiting on the part of general business. We doubt not that the present activity in the railway equipment market may prove to have a salutary influence on the industrial situation as a whole. If such proves to be the case it will not be the first time that the equipment market has led in a restoration of business confidence.

A Contest on the "19" Order

THE INTENSE INTEREST which railway men have taken in ways of reducing operating costs during the past few years has brought about a definite trend toward the exclusive use of the "19" order on numerous roads. There is nothing new in the use of the "19" order, for the standard code of 1889 authorized the use of either the "19" or the "31" form, or a combination of the two, for the movement of trains. However, as recently as fifteen years ago the Train Dispatchers Association discussed the subject for a half day and only three members of the 175 present advocated the use of the "19" order. A decided change has been shown in more recent years and a committee of the Association of Railroad Superintendents at the convention of this organization last June recommended the exclusive use of the form "19," indicating that this practice is becoming more general. This method has been found to increase the efficiency

of operation to such an extent that decided efforts are being made by progressive operating officers to extend its use, not only in automatic territory but on single track outside of block signal territory as well.

In order that up-to-date information on this subject may be made available for those interested, the *Railway Age* has announced a contest on "The Use of the '19' Train Order" to which it solicits contributions from railway officers and others familiar with the advantages and disadvantages of this method of handling trains. A prize of $125 will be awarded the best paper and a second prize of $75 will be awarded the second best paper, the awards to be made by three practical railway officers who will base their decisions on the practical value to operating officers of the information included in the papers. Particular attention will be given to descriptions of methods actually being used and to results being obtained. Other articles that are accepted for publication, in addition to those winning prizes, will be paid for at the regular contribution rates.

Several papers have already been received touching on important points of the subject. However there are many phases of operation in connection with train operation by "19" orders that have not yet been mentioned. For the benefit of railroad men in general, those who have information on this subject are urged to present it. Papers should be addressed to the editor of the *Railway Age*, 608 South Dearborn street, Chicago, and must be received by November 1, in order to be included in the contest.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Comparative Statement of Operating Averages. Class I-Steam Roads in the United States. Years 1923, 1922, and 1921. Issued by Bureau of Statistics, Interstate Commerce Commission. Statement 24200. 91 p. Pub. by Govt. Print. Off., Washington.

Government Ownership, by Herbert Hoover. Radio talk by Secretary of Commerce delivered Sept. 29, 1924. 18 mimeo. p. Issued by Office of Secretary of Commerce, Washington, D. C.

A Preliminary Abstract of Statistics of Common Carriers for the Year Ended December 31, 1923. Prepared by Bureau of Statistics, U. S. Interstate Commerce Commission. 28 plano. p. Pub. by Govt. Print. Office, Washington. 10 cents.

Standard Railway Sanitary Code. Recently amended. U. S. Public Health Service. Supp. No. 46 to Public Health Reports. 13 p. Pub. by Govt. Print. Off., Washington. 5 cents.

Wood-boring Mollusks from the Hawaiian, Samoan and Philippine Islands, by Robert Cunningham Miller. Discussion of the Teredo and other marine borers. University of California Publications in Zoology. v. 26, no. 7. 14 p. 4 plates. Pub. by University of California Press, Berkeley, Calif.

Periodical Articles

"Cross Country," An Exciting Railway Game. A game, primarily for children, the object of which "is to teach the players how to travel across the United States from coast to coast by 24 of the leading railroads, showing where connections are made . . ." A Study of Feminine Invention, Scientific American, October, 1924, p. 260.

Great Triple Problem Presses on the City, by Silas Bent. "Transit, traffic and transportation," one proposal being for commuter railroads in the city, and for superstreets in New York. New York Times, Sept. 28, 1924, sect. 8, p. 1.

India's Transportation Development, by Brower V. York and others. Railroads, p. 782-783. Commerce Reports, September 29, 1924, p. 782-785.

Radicalism in the United States, by Edwin W. Hullinger. A study of where it is found and who are responsible. Scribner's, October, 1924, p. 433-441.

Rail Stockholders Have Right to Larger Dividends! by Joseph M. Goldsmith. Magazine of Wall Street, September 27, 1924, p. 837-839.

The Railroads on the Griddle, by Richard Hoadley Tingley. Discussion of results of intensive regulation by State and Federal authorities. American Mercury, October, 1924, p. 238-243.

Secondary Stresses in Bridges, by Cecil V. von Abo. "This paper first describes all methods which have been proposed for the complete analysis of secondary stresses due to the rigidity of the joints in bridge trusses. . . . A typical through railway bridge of six panels is analyzed by each method in turn, using unsymmetrical loading . . ." p. 969. Proceedings of the American Society of Civil Engineers, September, 1924, p. 969-1117.

New Books

Air Brake Inspectors' Handbook. By Carl Glenn, air brake inspector, Chicago, Rock Island & Pacific. 200 pages, illustrated. 5 in. by 7¼ in. Price $2.00. Published by the Simmons-Boardman Publishing Company, 30 Church street, New York.

The Air Brake Inspectors' Handbook, which is the second volume of the Railwaymen's Handbook Series, is a worthy companion to the Car Inspectors' Handbook reviewed in the September, 1924, issue of the *Railway Mechanical Engineer.* The author has accomplished his purpose to provide a handy reference book for enginemen and air brake inspectors, giving prescribed tests by which to locate defects as the various symptoms appear. The tests described are useful to any man whose work requires him to operate or repair air brake equipment, particularly, as they cover all types of equipment in general use.

The text of the book contains 14 chapters on such subjects as air compressors, pump governors, the G-6 brake valve and double check valve, feed valves, triple valve defects, PC and ET equipment, the No. 6-A ET equipment, ET piping, air signal equipment and a chapter on the UC No. 12 universal passenger control valve. An interesting chapter is devoted to common defects occurring in the empty and load brake. This type of equipment is usually a difficult problem to the air brake man because of the disparity between loaded and empty weights of modern equipment. Particular attention has been paid in this chapter to defects in the K-2-L triple valve and also in the H-3 change-over valve. A chapter has also been added in which the author has gone into the various interpretations and rulings, as applied to brake and signal equipment, of the locomotive safety laws. The volume is quite complete and should be of real service to railroad men concerned with the operation or maintenance of air brake equipment.

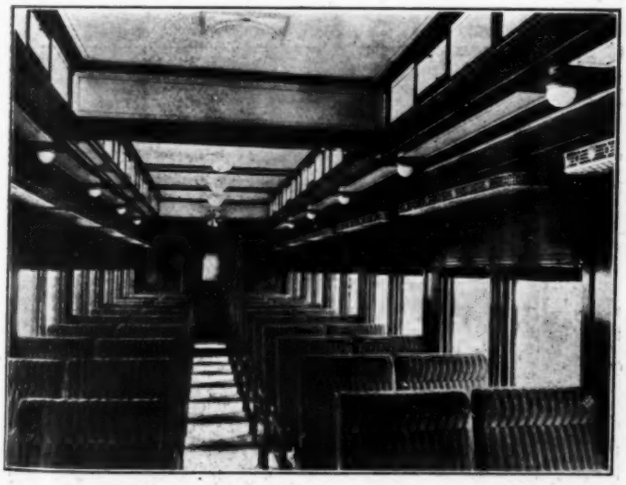
THE CITY OF CASPER, WYO., has brought suit against the Wyoming North & South to compel it to forfeit its right-of-way into Casper. The city charges that the railroad has defaulted in its promise to extend its line north from Salt Creek and is a detriment to Casper rather than an asset since a large trucking industry has been wiped out by its operation into the Salt Creek oil fields.

Left: Forward End of the Ladies' Parlor—Center: Forward End of the Observation Room—Right: Observation Room

New Alton Limited Operates on Fast Schedule

Faster and Better Train Service Between Chicago and St. Louis Inaugurated by the Chicago & Alton

THE CHICAGO & ALTON has re-equipped its Alton Limited running between Chicago and St. Louis, Mo., and, beginning September 28, decreased the schedule time of this train to 6½ hours. The train now leaves Chicago at 11:30 a. m., arriving at St. Louis at 6:00 p. m., stopping only at Bloomington, Ill., and Springfield. This schedule will reduce the running time between Chicago and St. Louis 1 hr. 15 min. The service consists of two new trains of all steel equipment.



The Chair Cars Have Wide Upper Decks and Non-Reversible Seats

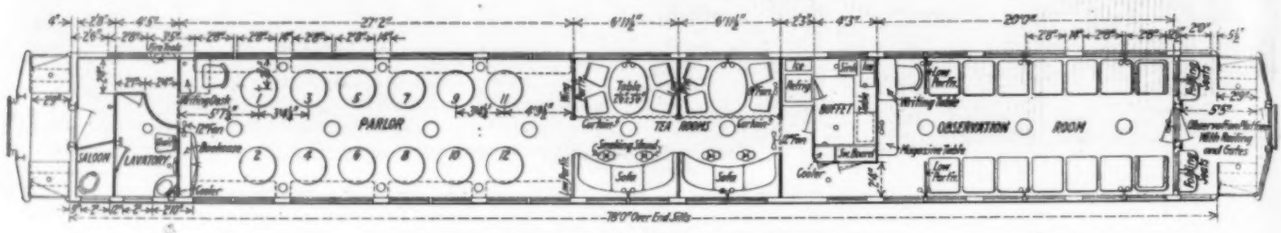
In the last few years the travel between Chicago and St. Louis in each direction locally has nearly doubled. The Chicago & Alton, with six daily trains in each direction, now handles between 50 and 60 per cent of this business. The travel between Chicago and the southwest has more than trebled in the last few years due largely to the oil interests in that territory, the cotton interests, and the fact that the territory is rapidly building up, particularly in the district around San Antonio, Tex., as a tourist resort. The direct lines from Kansas City, Mo., from Memphis, Tenn., and from New Orleans, La., to the southwest have been tightening up their schedules, increasing their train service, and, in connection with the Chicago & Alton, it was necessary that the southwestern lines from St. Louis make similar improvements.

The Observation Parlor Car Has Japanese Maid Service

The two new trains, recently received from the Pullman Car & Manufacturing Company, Chicago, represent an investment of approximately one million dollars and are completely modern in safety devices, lighting, ventilating and heating equipment. All of the cars are fitted with vapor

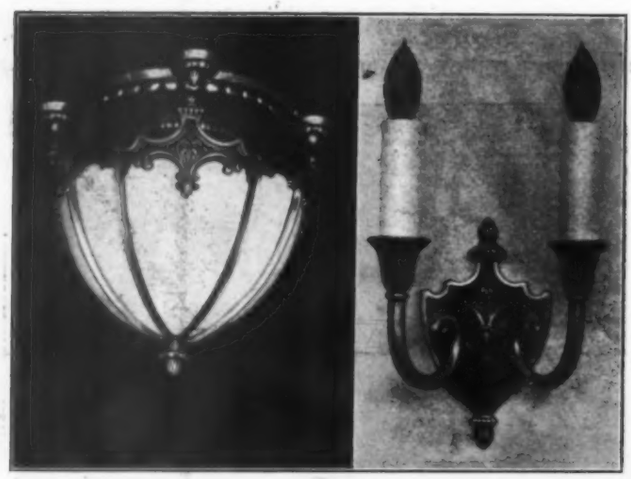
car heating equipment and thermostatic temperature control. The passenger coaches are unusually long. The coaches, dining cars and parlor cars are 87 ft. in length; the observation-parlor cars are 90 ft. long.

Each of the two trains has a mail storage car, one of which is named for Rudolph Brauer, superintendent of the sixth division, Railway Mail Service and the other for Captain West, chief clerk at large, Railway Mail Service. The railway post office cars are named for Paul Henderson, second assistant postmaster general and for Col. G. B. Armstrong, who is known as the father of the railway mail service.



Floor Plan of the Observation-Parlor Car

The combination passenger and baggage cars are named for the states of Illinois and Missouri. The length of these cars over the end sills and over the buffers is 78 ft. and 86 ft., respectively, and the inside length of the baggage compartment is 37 ft. This compartment is provided with a conductor's desk, lockers, baggage writing desk and a folding wash stand equipped with a mirror. The passenger compartment which is used as a smoker, seats 48. The seat design, which is similar to that used in the chair cars, is quite unique. The frame is all metal with the exception of a wooden arm rest. The seats are divided, as shown in the illustrations, and are equipped with detachable seat cushions and backs, which are covered with leather. The interior is similar in general appearance to the parlor and chair cars which are wood, finished in vermilion. The wood finish is applied from the window sills up, including the lower and side decks which tends to give the cars a much more homelike appearance than if a steel interior finish had been used. A separate saloon and wash room is located at the end of each car.



Ceiling and Side Lights for the Dining and Observation Cars

Two chair cars are used in each train, named for Oak Park and Evanston, suburbs of Chicago, and for Webster Grove and University City, suburbs of St. Louis. The overall length of these cars is the same as that of the combination baggage and passenger cars. The seating equipment is the same as that used in the smoking compartment of the combination passenger and baggage cars, except that the seats are equipped with higher backs and are upholstered with green mohair. These seats, which were furnished by the car builders, are stationary and cannot be reversed, as the entire train is turned at each end of the road. As shown in the illustration, the center ceiling lights and the lower deck lights are placed on each side of the car. The upper deck is unusually wide, measuring approximately seven feet, which gives the car a roomy appearance. These cars are also equipped with separate saloons and lavatories, the men's being located at the front end of the car and the women's at the rear. The aisle strips harmonize with the upholstering and window shades.

The parlor cars are named the George Washington, Thomas Jefferson, Abraham Lincoln, Grover Cleveland, Theodore Roosevelt and Woodrow Wilson. Three of these cars are used in each train. They are the same length as the combination passenger and baggage cars, and chair cars. Thirty-four revolving chairs are provided in each car. These are upholstered in mouse colored plush, striped with braided black. The draperies and carpets harmonize in color with the upholstery. The light fixtures are of statuary bronze and are arranged in a manner similar to that used in the chair cars.

Interior Arrangement of the Mail Cars

A standard Pullman drawing room, seating five persons, is located at one end of each car, with a women's lavatory and saloon in the other end. The men's toilet is located

in the same end as the drawing room. These cars have a total seating capacity of 39 persons each, which is exceptionally large for a parlor car.

Each of the two trains has one dining car. These cars are named for Springfield, the capital of Illinois and for Bloomington, where the Chicago and Alton railroad shops are located. They have the same vermilion interior finish throughout, including the wooden passageway at the kitchen

Each Parlor Car Has 34 Revolving Chairs

end of the car. There are ample lockers and refrigerators. Each car has a total seating capacity of 36. The interiors are lighted with numerous candelabras and deck chandeliers of silver. These cars are also each equipped with six ceiling paddle fans.

The kitchen and pantry are finished in white enamel. The equipment includes apparatus for the steam cleansing, sterilizing and drying of china, glass and other table utensils. The kitchen is equipped with an electric exhaust fan and reversible ventilators. All of the silverware and dishes are

Interior View of the Dining Car, Showing the Buffet and Lower Deck Lights

of special design. At the end of the dining compartment is the conductor's desk with a cabinet above and drawers below. Immediately back of this desk is a conductor's locker and opposite is the crew's locker, together with a refrigerator equipped with a cigar humidor. There are no vestibules on either end of these cars.

The observation-parlor cars are of the most unique in design of any of the cars in the train. In the observation end is a magazine table and writing desk with telephone service for use at Chicago and St. Louis, and 12 chairs. Immediately forward of this is a buffet, which serves a Japanese tea room and ladies' smoking room. Two enclosures comprise the tea room and along the side of the car opposite to these enclosures are two over-stuffed half-moon sofas provided with smoking stands. Draperies are hung at each end of the sofas, with a low partition between the two tea room enclosures and high partitions at the ends. In front of the tea rooms are 12 parlor car chairs which are for the exclusive use of ladies. A bookcase of special design, containing copies of the latest books, is located in the front end of the car, immediately opposite the writing desk. At the head end of this car is also a women's lavatory and saloon. No provision has been made for a men's lavatory.

The upholstery in the ladies' parlor and tea room end of the car is of Venetian blue velvet. The upholstery at the observation end is of green velvet with carpet to match. The lighting fixtures in the entire car are similar in design to those in the dining car. Four folding seats, which close automatically as soon as the occupants arise, are provided for the observation platform. There is also ample room for the additional use of from four to six large camp stools with

Each Dining Car Has a Seating Capacity of 36

backs, which are carried as part of the equipment of these cars.

The exterior of the cars is finished in maroon with light Venetian tints striped with gold. With the exception of the postal, dining cars and the combined passenger and baggage cars, which are built with blind ends, all of the cars have wide vestibules. Pullman cast steel trucks are used throughout both trains. Each car is also provided with a Giessel water cooler, equipped with a filter.

Both of these trains were run intact from Chicago to St. Louis on September 14, where they were placed on exhibition the first two days of the following week. Both trains were placed in service September 28, one starting from St. Louis and the other from Chicago.

THE CENTRAL RAILWAY CLUB will hold its next meeting at Hotel Statler, Buffalo, N. Y., on Thursday evening, October 9, when a paper by W. L. Robinson of the Baltimore & Ohio on the Chemistry of Combustion will be read. The title of the paper is, "The Three Atoms" and moving pictures will be shown.

Rigid Consolidation Grouping Opposed

Railroad Securities Committee of Investment Bankers Association Reports on Railroad Developments

"WE RESPECTFULLY SUGGEST that the Investment Bankers' Association record its view that the interests of the railroads and of the public will be best served if the Transportation Act of 1920 can be so modified that consolidation plans will be subject to the permissive authority of the Interstate Commerce Commission, but will not rest on an obligatory or so-called 'complete plan' of grouping prepared in advance by the commission."

This is the concluding and outstanding paragraph in the report of the Railroad Securities Committee of the Investment Bankers' Association presented at the meeting of that association held at the Cleveland Hotel, Cleveland, Ohio, on September 22, 23 and 24. The committee's report was primarily a discussion of recent developments in the railroad situation. These included: Progress in railroad consolidation; valuation; the effect of Panama canal competition; motor truck and bus competition, and the question of the sale of railroad securities by public tender. The chairman of the committee was Ray Morris of Brown Brothers & Co., New York, and the other members were William L. McKee, Thomas Newhall, Jerome J. Hanauer, Samuel L. Fuller, F. M. Weld, George Whitney, Joseph R. Swan, B. Howell Griswold, Jr., Robert D. Struthers, Philip B. Fisher.

The text of the report of the Railroad Securities Committee is given herewith practically in full.

Report of Committee on Railroad Securities

The outstanding question of the day is undoubtedly the problem of railroad consolidation. The present policy of the government towards group consolidations is closely in line with the progress that was being made by voluntary initiative, prior to the second Roosevelt administration. But from about 1904 until the period of the war, this natural and logical development was interrupted by a somewhat violent application of the rather hazy principles of the Sherman Law, coupled with the vesting of very full regulatory powers in the Interstate Commerce Commission, and the coincident curbing of the initiative of railroad managers. . . .

Conditions today, as reflecting the changed attitude of public regulation, are undoubtedly better than they have been in many years. The railroads at present are out of politics; railroad regulation is nearly negligible as a campaign issue, and holders of railroad stocks and bonds can fairly feel, as they contemplate the probable developments of the next few years, that the problems are those of constructive development rather than the imperative considerations of defending a forlorn-hope position against unceasing legislative bombardment.

Possible Rigidity of a Comprehensive Plan

There can be no doubt, however, that the long stress and uncertainty which prevailed before the Transportation Act was passed, so discouraged the older group of railroad operators that their initiative has suffered in dealing with the new governmental consolidation policy. The act specifically instructed the commission to prepare comprehensive group consolidation plans. As Commissioner Potter has pointed out, if the commission does this in advance of trading out the numerous complicated situations involved, the very existence of a complete paper plan will constitute a tremendous obstacle to its accomplishment. The rigidity involved would prevent the individual views of the properties concerned from being harmonized, and the promulgation of inflexible groupings, which nobody has power to enforce, would occasion violent fluctuations in the market price of the securities involved, particularly those of the weaker roads. These fluctuations in themselves would furnish an important obstacle to the acquisition of minor roads, except at exorbitant prices, not in the public interest.

Nor does valuation offer any solution of the problem. The classic case on this is perhaps the Atlanta, Birmingham & Atlantic, a railroad so much too well built for the needs of the possible traffic that the commission specifically states that its valuation of some $24,000,000 may be considered for rate-making purposes, but is not a value for consolidation purposes. (It may be remarked, parenthetically, that this value is equally irrelevant for rate-making purposes, since this road can collect no higher rates than its competitors charge.)

Significant Progress

Having these facts in mind, your committee stated, a year ago, that while consolidations were admittedly in the interest of the carriers and of the public, it was not apparent that the government machinery thus far devised was likely to be effective in bringing them about. But since the publication of the 1923 report, a new factor, of considerable importance, has made itself felt. There has been a significant revival of consolidation, necessarily subject to the consent of the Interstate Commerce Commission, but undertaken by private initiative. The offer to stockholders of the Erie, Chesapeake & Ohio and Pere Marquette by the Nickel Plate; the acquisition of the Texas & Pacific by the Missouri Pacific of the International & Great Northern by the New Orleans, Texas & Mexico; of the Denver & Rio Grande by the Missouri Pacific and Western Pacific and of the El Paso & Southwestern by the Southern Pacific, are important cases in point.

The action of the Interstate Commerce Commission on the original Nickel Plate case, after some three years of discussion of consolidation principles, was adopted by the slenderest majority, indicating that the battle for the so-called "complete plan" as against voluntary consolidations falling within the general scope of the groupings which the commission desires, is not yet completely settled. But events this year have undoubtedly emphasized the point that if the government desires group consolidations it can have them, provided the plan is not so rigid as to defeat its own ends, and individual initiative, always the American method of accomplishing results, is allowed to work as freely as possible under the broad supervision and guidance of the Interstate Commerce Commission.

Voluntary Consolidations Preferable

If the change in public policy thus indicated, that is, the change from insistence on a rigid plan, promulgated by the commission in advance, to allowing private initiative to make its own plans, under general control, becomes effective, it seems probable that American railroads are likely to enter into a long period of voluntary consolidations, which will accomplish effectively the objectives of the Transportation Act.

These objectives, so far as they relate to consolidations, would probably be held to include the creation of a series of groups where competition would be preserved, management unified, and the credit and excess earnings of the stronger

units merged into the mileage and excess assets (from an earnings standpoint) of the weaker units. An indirect benefit, but a real one, would also be the reduction of the normal share capital through mergers to a basis where the unit prices of the merged properties are higher and the shares, reduced in amount, become dividend payers; a change which would undoubtedly tend to benefit and stabilize credit. As bearing on this point, your committee would also reiterate the comment it made last year; that the undoubted tendency of regulation thus far has been to throw too much financing into the bond column, and that for the good of the whole situation it is important that a substantial part of the budget for extensions and improvements should be met in the future by the sale of stock, as was the case in former years. The process of merger and reduction of normal share capital undoubtedly facilitates this in view of the widespread state restrictions affecting the sale of capital stock below its nominal parity.

There is some vagueness with respect to the authority of the Interstate Commerce Commission to authorize these voluntary consolidations under the terms of the Transportation Act unless the Commission shall first formulate a complete plan. These difficulties, however, seem to have been surmounted in respect to the cases already mentioned. For the future, apparently all that is needed is the simplification and clarification of the law to give the Commission a free hand in granting or refusing approval of voluntary consolidation cases which come before it. It seems idle to expect that complete consolidation plans can be brought about with the initiative of Congress or of the Interstate Commerce Commission, but the progress under private initiative ought to be rapid and continuous because each accomplished grouping stimulates the formation of other complete groups by competing railroad systems.

Valuation

Considerable reference was made in the 1923 report to the vexed question of valuations. During the past 12 months no Supreme Court decision of first-rate importance as bearing on the basic determination of the main points at issue in railroad valuation has been handed down by the court. It seems probable, however, that the Kansas City Southern and the Los Angeles & Salt Lake cases will be decided before many months. While these two cases cannot be expected to clear up all the points of uncertainty, there is no doubt that each decision will aid in the recognition of certain underlying principles in the consideration of this far-reaching problem. Reference was made last year to the Supreme Court decision in the Southwestern Bell case, and to the definite promulgation of the court at that time that present value was one of the elements which must be considered. In view of the fact that the bulk of the valuation work thus far accomplished rests on a valuation period before the cost increases due to the war, there was apparently much open ground where present valuations are only one of the elements to be considered. Should the country be entering into a long period of slowly declining prices like that, for example, which followed the Civil War, it is indeed debatable whether it is to the interest of the security holders to have all the emphasis in rate making placed on a valuation as of any given date. Should this be done the security owner ten years hence might be told that because of the hypothetical decline in prices of that date as compared, for example, with 1924, a fair return would be less than a return on the actual cost of work undertaken at this time. This aspect of the problem is perhaps of less interest to railroad security holders than it is to the holders of the securities of many power and light companies which have made extensive developments during the present high-priced period, because railroad development since the war in relation to the total capital invested in the industry has been slight.

We should hardly anticipate, however, that the principles of valuation when finally determined (and at best they must be a very rough measure of values) can do more than establish an approximate figure to be "taken into account" rather than one which will rest firmly on the rather large group of widely different factors which the Supreme Court said must be considered. We can only repeat the general observation we made last year, that there is no evidence thus far of over-capitalization of the American railroad system, and the very difficulties which the long period of drastic regulation placed upon new railroad enterprises, have undoubtedly tended to concentrate growing traffic on existing routes, to the benefit of these routes. In former years, notably prior to the crises of 1873 and 1893, the extensive tieup of capital in the fixed form of new railroad construction was a predisposing cause of economic disturbances of treat intensity and long duration, and the effect of the competition of the new lines built under these conditions of speculative enthusiasm was often disastrous to the older companies.

This factor is apparently absent from the present situation, and the very effective discouragement of new construction during the last 20 years has undoubtedly improved the fundamental position of nearly all the important lines of railroad communication in this country.

Panama Canal Competition

We would call your attention to certain developments of recent years which have created new problems as yet not solved. One of the major ones, of course, is the Panama Canal, which has had a profound effect on transcontinental business. Certain roads, such as the Southern Pacific, have been able to replace with increased local traffic the business lost because of the canal, but certain other lines have felt this water competition very severely and this has been particularly true of the through lines operating in the Northwest, where a series of years of unsatisfactory crop prices has complicated the problem.

Motor Truck Traffic

The extraordinary development of the automobile and the motor truck in connection with the really phenomenal highway improvement of the past decade has created a new and very effective source of competition to the railroads, not only in short-haul passenger traffic, but also in short-haul freight traffic. The use of motor trucks in handling mill supplies in Massachusetts, for example, has grown to rather astonishing proportions since the war.

More Dangerous than Trolley Lines

Twenty years ago the railroads were confronted with a sudden and unexpected situation where the rapid growth of interurban lines took away their short-haul passenger traffic and began to make inroads on their short-haul package freight traffic. This particular form of competition disappeared quite as rapidly as it came. But the competition of the motor car and of the motor truck is not only far more widespread, but may be said also to rest to an annoying extent on the taxes which the railroads themselves pay for the construction of modern highways. This intensive use of the motor truck, however, is coupled with another problem; that of terminal congestion which has reached alarming proportions in recent years. It is beyond the scope of this report to deal with this new and technical change in the problem of transporting local freight in the vicinity of large cities, but the peculiar difficulties of the New England railroad situation at the present time can perhaps be traced more to the terminal problem than to any other single cause. In the end, the solution may lie in modification of freight rates making more definite recognition of terminal costs than at present is the case, and applying an appropriate charge therefor. Similarly, in situations like that of the New

England roads where origination of high-priced long-distance freight is carried on at considerable cost to the originating roads, due to local conditions, the solution may perhaps lie in an adjustment of rate divisions based on a recognition of the changed facts of the case. The Interstate Commerce Commission apparently has all the necessary authority under present day regulation to deal with problems of this sort, and a recent Supreme Court decision (Orient divisions case) emphasizes this power.

General Conditions Are Excellent

In general, your committee feels that outside of New England, and perhaps of the Northwestern states—two sections where the railroad situation must still be regarded as unsettled—general railroad conditions from the standpoint of technical progress, of relationship with the public and of security for the railroad bondholder are excellent. The railroad industry has learned the difficult art of operating privately owned properties under full public regulation, and the regulators, in turn, have to a large extent dropped the attitude of hostility and suspicion so much in evidence ten years ago. Meantime, growth of traffic has tended to be somewhat greater than growth of plant facilities, so that today there is abundant work for substantially the entire railroad system of the country to do, and the problem of excess mileage, which used to present such unsurmountable difficulties in former days no longer is an important issue.

Sale of Securities by Public Tender

Your committee desires also to call to your notice the increased attention which the Interstate Commerce Commission has paid during the past two years to the question of the sale of railroad securities by public tender. The question first came before your committee nearly two years ago, and your committee was asked to attend hearings on the subject, but declined on the ground that it had no instructions from the governing body. Subsequently at one or more of the Governors' quarterly meetings the matter received informal discussion, and it was the opinion of the Board that there were many reasons of public policy which made it inadvisable that the general run of railroad bonds should be offered for public tender. The reasons may be summarized briefly in the comment that the goods are not standardized. Where the issuing banker has an opportunity to consider the mortgage with the railroad authorities, every detail can be scrutinized and a document drawn which meets the varying needs arising from the position of the borrower, the position of the lender and the general position of the money market. If a bond containing the characteristic combination of junior liens, protection against priority and the many other complicated clauses which necessarily characterize most refunding bond issues today, were to be offered for public tender without the opportunity for modification to meet the requirements above briefly mentioned, it seemed to the Governors that there was real danger of introducing careless methods of purchase due to the stimulus of competition. Moreover, there is, of course, the important further danger that the public tender method applied to railroads of indifferent credit might produce eager bidders in an exceptionally favorable market, but might result in a road having no banking house in a position of continuing responsibility to look after its needs in the periods of unfavorable markets. Many instances would occur to an observer of the railroad situation where certain railroads have been carried over unfavorable periods because of this sense of continuing responsibility on the part of the issuing banker.

Another entirely different factor operating against the sale of railroad securities by public tender is the consideration that competitive bidding is a process which consumes time, and involves delays which may, under certain circumstances prove hazardous. It is necessary to distribute securities much more widely than was formerly the case, and the experience and organization which a large banking house favorably known to investors provides is deemed necessary to such distribution.

Still another factor is the great importance to the railroads of the existence of the present extraordinarily efficient distributing organization represented by your membership. In the last analysis it is highly probable that railroad securities from the standpoint of the railroads themselves can be distributed year in and year out better and more cheaply under present methods of sale than they could be if a general rule of sale by public tender made this type of market so unprofitable to the small dealers that it would not be worth while for them to maintain elaborate organizations for the purpose. Taking bad markets into consideration as well as good ones, your committee feels that the disappearance or important reduction of the present distributing organizations would result eventually in the railroads receiving lower and not higher prices for their securities.

Recapture

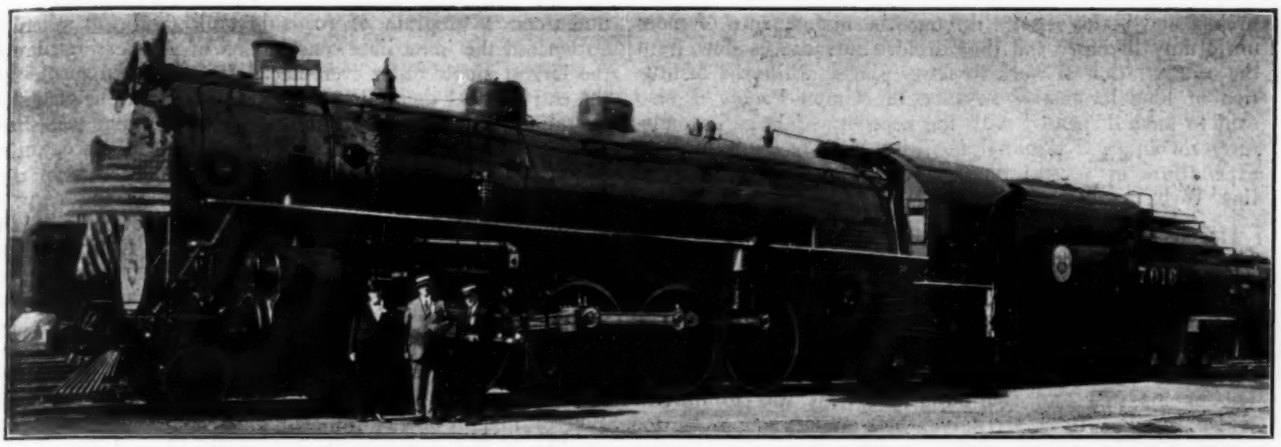
Perhaps the most important Supreme Court decision of the year as affecting the investor in railroad securities was that of January 8, 1924, in which the court, by unanimous decision, handed down by Justice Taft, in the so-called Dayton-Goose Creek case, sustained the recapture clause. As affecting the right of the commission by legislative enactment to take for diversion into a common fund any part of the earnings of the carriers, the decision states:

> The statute declares the carrier to be only a trustee for the excess over a fair return received by it, the excess never becomes its property and the carrier never has such title to the excess as to render the recapture of it by the government a taking without due process.

Opinions differ somewhat widely with regard to the question of public policy involved in this decision, but the point at issue represented what may be described as one of the three major controversies affecting the working of the Transportation Act of 1920. The other two fundamental points, i.e., the basis of valuations and the determination of what is a fair return, are still open and it may take a series of decisions by the Supreme Court to determine the fundamental laws on which future railroad regulation must presumably rest.

Gilliams

Sir Henry Thornton, President of the C. N. R., and Executive Staff Greet Prince of Wales' Train on Arrival at Montreal



The Engine That Made the Run from Council Bluffs, Ia., to Ogden, Utah, and Return. Left to Right: W. M. Jeffers, General Manager; Carl Gray, President, and O. S. Jackson, Superintendent of Motive Power.

Union Pacific Water Work Proves Profitable

Investigation Develops Significant Facts About Long Locomotive Runs—Firebox and Flue Records Striking

THE UNION PACIFIC has attracted considerable attention in the past two or three years by its work in developing long locomotive runs. The first step in this direction was taken in March, 1921, when the passenger run between Council Bluffs, Ia., and Cheyenne, Wyo., a distance of 509 miles, was reduced from four engine districts to three, with one run of 225 miles. It was only slightly more than a year afterward when, on June 1, 1922, Engine No. 7000, a coal-burning locomotive of new design, only a few hours after completing a fast trip of 281 miles with a 2,481-ton train of refrigerator cars, left Omaha with a passenger train of 12 steel cars, hauled it up-grade 509 miles to Cheyenne, Wyo., without delay, and left a few hours later with an equally heavy train which it hauled 484 miles to Ogden, Utah, arriving within one hour of schedule time, notwithstanding ruling grades of 1.55 per cent. This performance was followed by a series of equally and in some cases more spectacular runs elsewhere on the system, until by July 3, less than five weeks from its initial trip, this engine had run fully 10,000 miles, or at the rate of 300 miles a day. A few months later a sister engine, the 7016, started from Council Bluffs, Ia., with a mail and express train of 12 steel cars and hauled it at the scheduled average rate of 45 miles per hour, including stops, for the entire distance of 992 miles over the continental divide to Ogden, and increased the figure to 1,984 miles by making the return trip with the next passenger train. Thus by rapid strides the Union Pacific progressed until at present it is the established practice to make the following passenger runs without changing engines:

A Portion of the Laboratory at Omaha, Neb.

LONG PASSENGER RUNS ON UNION PACIFIC

Kansas City, Mo., to Denver, Colo., 644 miles.
Cheyenne, Wyo., to Pocatello, Idaho, 551 miles.
Denver, Colo., to Ogden, Utah, 577 miles.
Council Bluffs, Ia., to Denver, Colo., 562 miles.
Council Bluffs to Cheyenne, Wyo., 509 miles.
Cheyenne to Ogden, 483 miles.

This does not include certain runs on the Los Angeles & Salt Lake and the Oregon-Washington Lines, notably a run from Los Angeles, Cal., to Caliente, Nev., 460 miles.

In addition to the passenger runs the former freight engine runs have been doubled by making one district where there were two before, a program which gives the Union Pacific the distinction of operating the longest coal-burning passenger run on record, and as far as known the largest number of runs of similar extent.

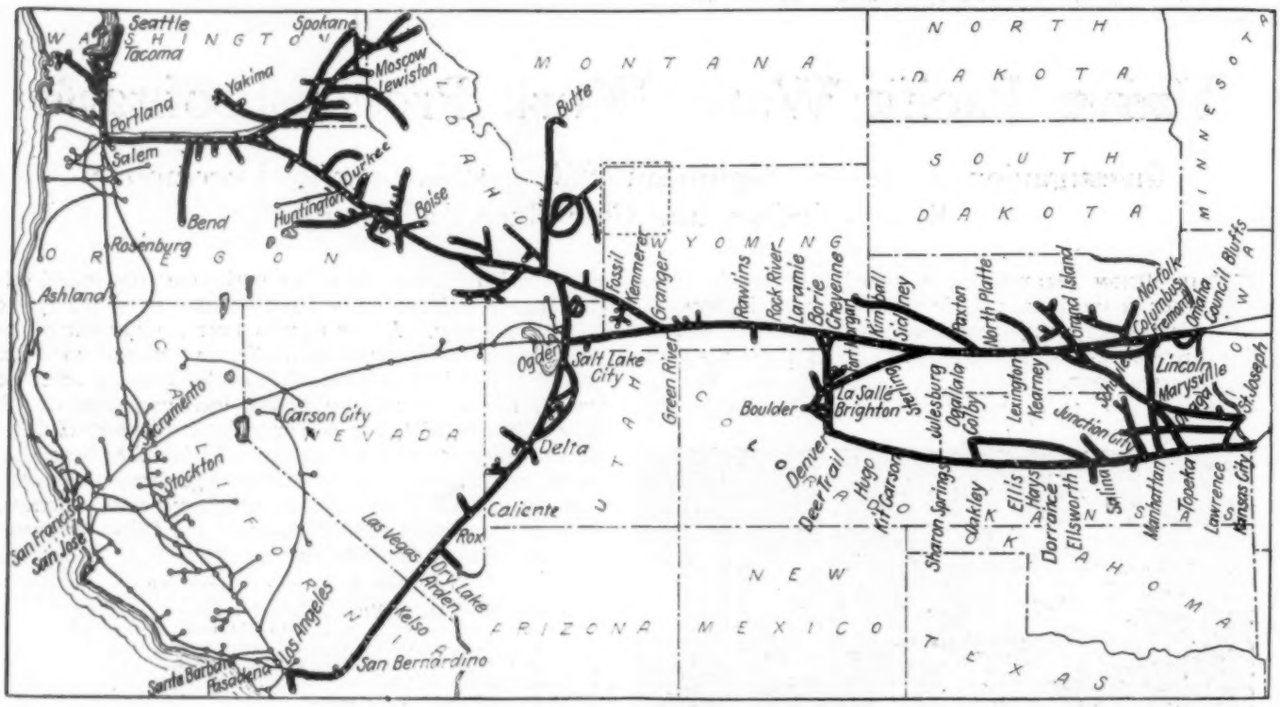
The interest aroused by these long locomotive runs has arisen from their far reaching effect on railway operation. Attention has been called to the marked savings immediately accomplished in the number of locomotives required to produce a given number of train miles. It is reported that no less than 70 engines have been released for other duties, while for all runs the reduction is said to equal 25 per cent of all locomotives assigned. Estimates have also been made of considerable savings in enginehouse expense, running repairs and fuel. Included in the savings are also those that result from the marked increases in the available mileage of engines per day, the saving in wages for train crews, etc. It has even been asserted from the results so far, that locomotives will run longer between shoppings for

firebox and boiler repairs through the maintenance of more uniformity in heat, and that decided advantages flow from the concentration of work in fewer places, while the institution of long locomotive runs on the Union Pacific is also said to have dispensed with the necessity of large expenditures for enlarged terminal facilities, notably the immediate expenditure of several hundred thousand dollars at Rawlins, Wyo., and Grand Island, Nebr.

Long Runs Significant

But the long runs on the Union Pacific have also served to arouse an interest in the work which has been done in connection with the water supply. The Union Pacific grew up with a water problem. When General Dodge received his commission from President Lincoln to construct the road, one of his first and continuing problems was to provide water supplies in a territory where water was none too plentiful. The outcome of this was that many of the waters obtained were not of the best, particularly on the plains east of the Rockies. But no trouble of consequence from this source has been encountered in the long locomotive runs. Engine 7016, which made the run from Council Bluffs, Ia., to Ogden, Utah, and back, is reported to have completed the trip without foaming in spite of the fact that no boiler compound was used and the boiler was not washed out at Ogden! In no case has trouble from foaming or dirty boilers been reported on any long passenger run since the runs were inaugurated! It is also significant that as the development of these long runs proceeded, the number of relief engines has been reduced until at present it is the practice on the Omaha-Cheyenne line, for example, to keep only one on hand, to protect from 18 to 20 trains a day. The effect of such observations is to attach a new importance to water improvement programs, and especially to arouse an interest in the work which has been done by the Union Pacific in this direction.

Water improvement work has had a checkered career on the Union Pacific. From an early date it was customary to use some form of boiler compound. In 1903 the road undertook a program of roadside tank treatment when it authorized the immediate construction of 25 treating plants, the largest single order ever placed for such equipment. By the end of 1904 the Union Pacific had 35 treating plants in operation. But the popularity of the installations was short lived. First one and then another facility was discontinued until in 1916 only 15 of the original plants were in use, the remainder being either dismantled or serving only as additional storage for roadside supply. However, on the Kansas division, between Kansas City and Denver, where the natural waters were particularly bad, the treating plants, while not living completely up to expectations, had given a reasonably good account of themselves. There was a belief in some quarters also that the plants were not being operated to the best advantage. Furthermore, it was becoming apparent, with the growth of traffic, that some solution of the prevailing problem must be found. The poor quality of the supply was continually blamed for various troubles incident to the operation of trains. Engine failures and aggravating delays were frequent. With the added requirement of developing new supplies confronting the road and the now fully appreciated need of using some judgment in their selection to avoid as far as possible waters unfit for use, it was agreed that a systematic program of improvement work should be undertaken.



Map of Union Pacific System, Showing Location of Softening Plants

Water Work Organized

The policy adopted was in general to attack the problem in three stages: First, after making a general survey of conditions with the assistance of a chemist, to give first-aid treatment wherever troubles were found, advising immediate attention; next, to get better water supplies, and third, to perfect earlier improvements so as to put the work on a permanent basis. It was found that some of the plants were suffering from lack of competent care and supervision, others were not properly fitted to the location, but particularly it was found that when installing these plants future requirements had been underestimated, as a result of which numerous plants were being operated beyond their capacity. At

Grand Island, Nebr., for instance, a terminal point between Council Bluffs and Cheyenne, the capacity of the treating plant was but 10,000 gal. per hour, affording a maximum efficient daily treatment of 240,000 gal. if the plant was operated 24 hours a day. Yet in 1913 the water requirement at this point was 593,000 gal. per day, and is now as high as 1,000,000 gal. per day. The situation at Julesburg, Wyo., affords another striking example where, notwithstanding the bad water, the capacity of the existing plant was only 8,000 gal. per hour.

New Treating Plants Built

Among the first remedial steps taken was to shut down one of the 15 existing plants still in operation and to start up two of the plants that have been lying idle. There was also some shifting of the plants to new locations along with the installation from year to year of new facilities, until at present a total of 33 treating plants are in operation, including the plants built prior to 1916, which have been reduced in number to 17. This does not include 8 plants on the lines west of Ogden.

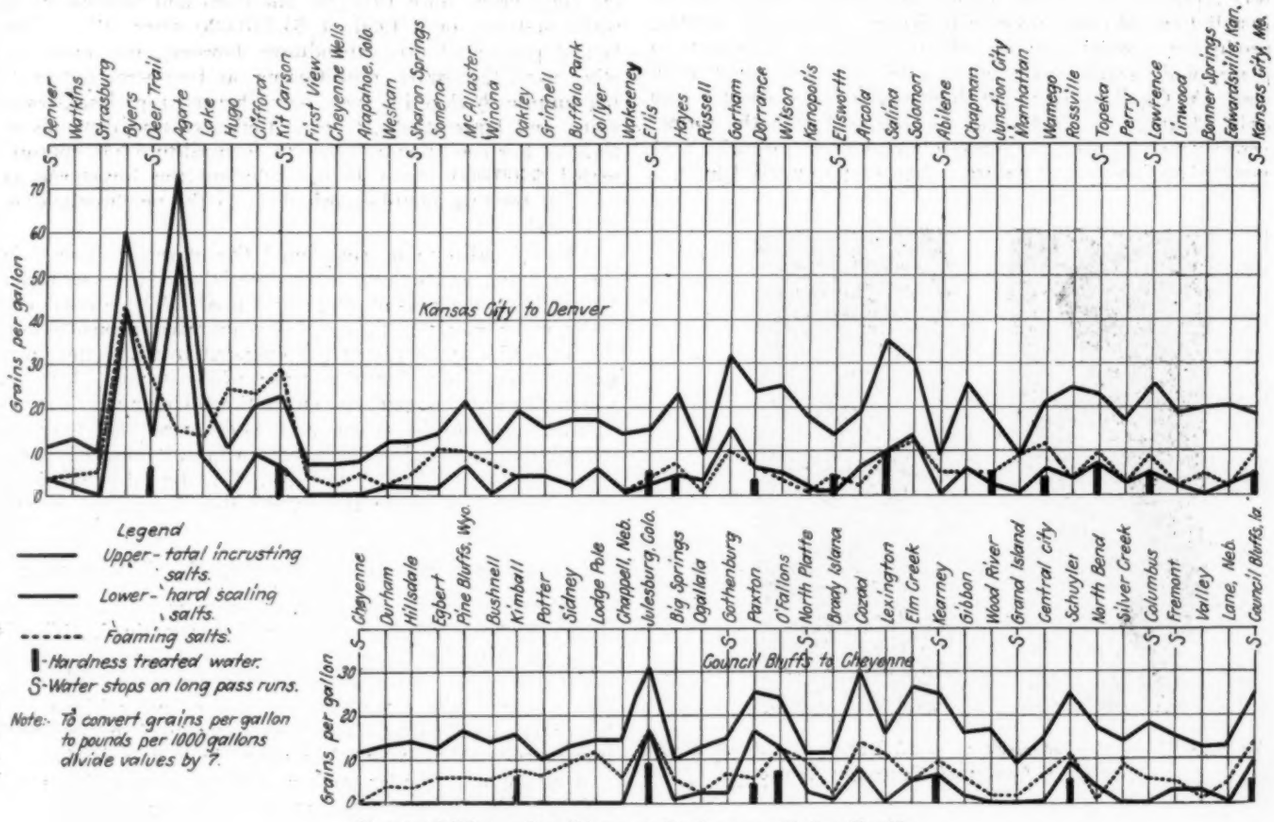
The division on the Union Pacific which is most completely equipped is the Kansas division, comprising the main line between Kansas City and Denver, where there are 12 plants, not counting treating plants at Marysville, Kan., and Onaga, junction points on the crosslines between the Kansas City-Denver line and the Council Bluffs-Cheyenne line. This is not a line of the most heavy traffic, but carries a very considerable tonnage and is the region of the worst water from the combined scaling, pitting and foaming standpoints. By referring to the chart, which gives the average hardness of the natural water at all stations, the amount of alkali or foaming salts, and the amount of sulphate hardness together with the amount of incrustants remaining after treatment wherever treating facilities are located, it will be seen (1) that a wide variation exists in the qualities of the water (2) that in no case is the amount of incrusting matter less than 8 grains per gal., or 1 1/7 lb. per 1,000 gal., (3) that in the vicinity of Denver, the water carries as high as 75 grains per gal. of incrusting matter alone at one point with foaming salts to the amount of 30 grains or more at several points, and (4) that the natural water averages about 20 grains per gal. of incrustants.

Anti-Foaming Compound Supplements Softeners

While this water is largely of a carbonate hardness with only a few waters carrying an excess of 10 grains per gal. of sulphate the scale it produces is quite generally hard, which condition, together with others, makes the 12 treating plants none too many. In the absence of more, the requirement is one of harmonizing the different waters as much as possible. Consistent with this plan enginemen have been impressed with the importance of giving preference to designated water, and the roadside tank treatment is supplemented by the use of an anti-foaming compound, which is made in the company's laboratory. As the chart shows, all of the water ordinarily taken in making the long locomotive runs is treated with the exception of four points, one of which is Denver, where no treatment is required and none of the others of which are very bad.

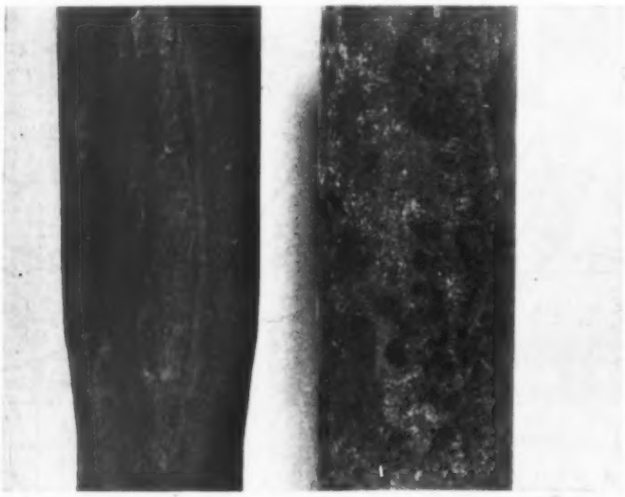
Of the remaining plants seven are distributed along the line between Council Bluffs and Cheyenne, three on the lines north out of Denver and one at Granger on the line between Cheyenne and Ogden. This is not many plants for this section, which is the territory of heaviest traffic, being double-tracked throughout with as many as 18 passenger trains per day, but the plants are situated where operation is considered productive of the most benefit (all coal taking points).

It is emphasized, however, that the installations of these



Charts of Water Conditions at Stations on Union Pacific

facilities was only one part of the work done. As a matter of fact a plant that had been in use at Cheyenne was removed, the city of Cheyenne having developed a water supply which required no treatment. An old and inadequate treating plant at Grand Island was also removed as an incident of a development carried out there where the driving of two new wells and the installation of electrically-driven centrifugal pumps not only produced a water carrying only 8 grains of incrustants as compared with the 21 grain water of the old steam-operated wells but also increased the supply from 350,000 gal. to 1,000,000 gal. per day and at cost of only two cents per 1,000 gal. as compared with the former cost of six cents per 1,000 gal., which is equivalent to a saving in operation alone of $40,000 per year on the basis of present consumption. At North Platte, one of the most troublesome water points on the line, an open well supply was replaced by a river supply and a steam plant by the installation of two electrically-driven centrifugal pumps, producing a water carrying only 12 grains of incrustants in place of 21 grain water and at a 60 per cent reduction in cost. At Ogallala a similar change brought in a water with only 13 grains of total solids as compared with the former water which carried 89 grains of total solids, of which 51 were of an incrusting nature. Again at Council Bluffs, a



Left—A Bagged Flue from a Wind Burn. Right—A Pitted Flue from Action of Corrosive Water

new supply not only produced a supply affording a $3,000 reduction in the cost of chemicals required annually, but also a saving of $12,000 a year in water bills.

The quality of water obtainable on the Council Bluffs-Cheyenne lines since the completion of these changes is represented by the chart. As a whole they are still hard waters but are generally low in both hard scale-forming materials, which with the several treating plants and a distribution of water which allows some choice in selection for the enginemen, offers a reasonable protection against trouble except between North Platte and Julesburg. Here it is the practice to use anti-scale compound.

Trains running between Omaha and Denver leave the Council Bluffs-Cheyenne line at Julesburg beyond which were four especially bad waters. The first was at Sterling, where the city water was being used, which carried about 45 grains of minerals, of which 35 were incrustants. The Union Pacific now has its own supply at this point consisting of wells with electrically-driven pumps which furnish water carrying only 14 grains of mineral. At the other three points—Ft. Morgan, Colo. (where the former supply carried over 100 grains of mineral matter in solution), La Salle and Brighton—are treating plants, the last two also serving the line from Denver to Cheyenne and Ogden.

Filters for Muddy Waters

Conditions on the line west of Cheyenne were improved by abandoning the original supply at Green River, Rawlins and Rock River, and getting new ones by building pipe lines to rivers, the pipe lines being about 17 miles long. While this was an expensive undertaking it produced a much better water except for mud encountered at Green River and Rawlins, which was overcome by installing gravity sand filters. To improve conditions further in this region, the supply at Leroy, in the vicinity of Ogden, was discontinued and the practice instituted, temporarily at least, of hauling water from Spring Valley, about 5 miles distant.

For these improvements $1,089,000 has been expended in the eight years since 1916 for additions and betterments to water stations, or a total of $3,330,000 since 1903. The largest portion of this expenditure, however, was made for other work than water conditioning, as for increasing existing supplies by building new pump houses, pipe lines, reservoirs, and larger tanks, to meet the increasing demands of traffic. For conditioning alone the expenditure has approximated $500,000, since 1916, including the investment in existing treating facilities, which is in the neighborhood of $350,000.

There is also to be considered the expense involved in the operation and upkeep of the special conditioning facilities and for the cost of compound used. The annual cost of labor for operating the treating plants varies considerably. At some places the plants are operated by coal chute men which allows a division of expense, while at other places, as where city water is used, the entire time of pumpers is necessarily charged to the softener. It is estimated that the present labor charge is $19,900 a year, while the cost of chemicals amounts to $31,300 per year. But this expenditure is small in proportion to the results that have been accomplished.

Saving from Softeners Exceeds $200,000 Annually

Unfortunately, the full benefit from a water improvement program over a system can never be ascertained. This is especially true in the case of the Union Pacific where the improvement has been gradual in progress and scattered, and where at the same time changes of other kinds have been made on the road which have contributed to the general improvements that have taken place, including the installation of hot water boiler washout systems at several terminal points. The Union Pacific, moreover, has given practically no study to the development of precise figures of the savings likely to follow or actually made by the different projects undertaken, because of the fact that the improvement was indispensable, or that there were sufficient obvious benefits to make the compilation of itemized savings unnecessary.

A common method of determining the value of water treatment itself on railroads is to set a money value on each pound of scale-forming matter which the treating plant is calculated to have prevented from entering the boiler. In 1911 the American Railway Engineering Association had a series of tests begun at the University of Illinois with a locomotive using feed water of different degrees of hardness, from which it was concluded that every pound of scale-forming matter removed by treatment could be conservatively taken to represent a saving of seven cents. This figure has since been raised to 13 cents to conform to present prices of labor and fuel. It is found that 933,120,000 gal. of treated water was consumed on the Union Pacific in 1923. This consumption is reported to have been accompanied by the removal of 3,700,000 lb. of scale, but for estimating purposes let it be assumed that the scale removed was 2,500,000

lb., arrived at by taking the average hardness of the untreated water at 25 grains and that of the treated water at 7 grains. This, on the basis outlined, is equivalent to a gross saving of about $350,000, or a net saving of $250,000 after deducting $100,000, the estimated annual cost of operation, maintenance and depreciation. Thus by this method the saving per year from the water treating facilities alone is equal, roughly, to about 75 per cent on the total investment to date in these facilities.

Big Increase in Firebox Life

A more graphic and accurate picture of the results is obtainable when a study is made of the experiences of the Union Pacific with fireboxes and flues. The accompanying table gives the life of the first fireboxes in each of 13 Class 200 engines put in service in 1906 on the North Platte district where some of the most troublesome waters were encountered.

Life of Fireboxes New in 1906

Engine No.	Renewed After
201	12 months
202	15
203	19
204	17
205	23
206	19
207	16
208	15
209	20
210	18
211	15
212	18
213	14

This record shows that in no case did a firebox last over 23 months, and that the average was as low as 17 months. There was a suspicion at the time that the coal used was contributing to this short life, but upon investigation, which disclosed the fact that the same coal was being used elsewhere without trouble, it was concluded that this early deterioration arose from the condition of the waters used. In contrast the life of fireboxes in this district now averages about 49 months, without any change in the kind of material used.

Another indication of conditions previous to extensive improvement work is shown by the following record which has been unearthed regarding 10 Class 1800 engines which were put in service in 1903.

Record of Engines New in 1903

No.	Life
1860	30 months
1861	32
1862	33
1863	31
1864	34
1865	29
1866	36
1867	34
1868	35
1869	34
Average	32.8

These engines were put in service between Omaha and North Platte but are understood to have been shifted around considerably, and doubtless received the benefit of some treated water, but notwithstanding they required firebox renewals after an average of 33 months. As compared with this the average life of fireboxes in 1916 for the entire territory east of Ogden was 68 months, while in 1923 it is given as 121 months, or double that in 1916.

Considered on a mileage basis instead of a calendar basis, the record for all districts is as follows:

Mileage of fireboxes renewed in 1916	188,060
Mileage of fireboxes renewed in 1923	284,599
Percentage increase	50

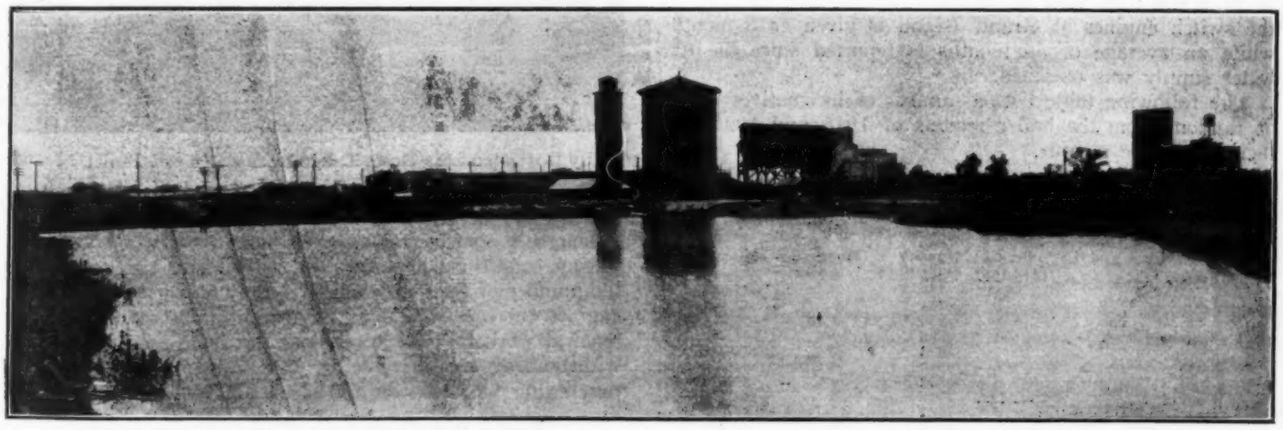
Additional firebox data are contained in the accompanying table giving the number and also the percentage of firebox renewals for each of a series of years together with the number of engines owned.

Firebox Renewals and Engines Owned

Year	Number Fireboxes Renewed	Number Locomotives Owned June 30	Per cent. Locomotives Owned Receiving New Firebox
1908	64	660	9.69
1909	64	660	9.69
1910	89	694	12.82
1911	87	768	11.32
1912	106	768	13.80
1913	94	841	11.17
1914	98	822	11.92
1915	42	856	4.90
1916	51	830	6.14
1917	78	844	9.24
1918	82	918	8.93
1919	68	946	7.18
1920	54	948	5.69
1921	52	1,048	4.96
1922	44	1,004	4.38
1923	83	1,008	8.23

From this it is seen that the percentage of renewals in 1923 is as high as that in 1908. Upon inquiry it develops, however, that in 1908, 1909 and 1915, the low percentage years prior to 1916, financial conditions in the Union Pacific territory were such that the appropriations for locomotive repairs were small. Also the increase in the renewals in 1923 arose from the small number of fireboxes renewed in the last six months of 1922 on account of the strike conditions. By grouping the renewals to avoid these irregularities it is found that the percentage of renewals for the eight years since 1916 was 6.8 as compared with 10.6 for the 10 years preceding.

Thus every compilation shows a reduction in firebox renewals which logically assumes a larger significance when the increase in the amount and size of power is taken into consideration, the record showing 1,008 engines in 1923 as compared with 660 in 1908. Taking the increase in life at 50 per cent and the average cost of a new firebox at $1,700 it may be roughly estimated, on the basis of pres-



The Present Water Supply Facilities at Council Bluffs, Including a 35,000 Gal. per Hour Softener and Large Storage Tank

ent prices, to have cost $85,000 less to renew fireboxes for the same mileage in 1923 than under conditions as recent as 1916. Much of this saving is undoubtedly the result of better water and is, of course, exclusive of the cost of repairs prior to renewals which, according to the consensus of opinion of the master mechanics on the Union Pacific ascertained by submitting this question to them, has been reduced 40 per cent in the last 10 years. In discussing firebox renewals no consideration has been given to the item of side sheets, the life of which has also been extended, as suggested by the report that side sheets formerly lasted only 18 months at Julesburg.

Increase in Flue Mileage Marked

As between fireboxes and flue records the latter are the more striking. Probably the best index of the extent of the improvement in flue life is the record of purchases made over a given period. In 1917 the Union Pacific, confronted with rapidly increasing prices bought a two years' supply of boiler flues on the basis of the average consumption at that time. Subsequently, only a very small number of flues were bought to take care of certain special needs; yet in 1921, after four years, the road still had sufficient flues on hand to last two years more on the basis of the consumption at that time. A number of factors are to be considered in explaining this condition, but the influence of better water in bringing this about has been considerable, a conclusion which appears well founded in the light of other data.

Mention has previously been made to the bad character of the water at North Platte, Neb. Before the water was changed the flues in the switch engines at this point, which are operated 24 hours a day, was only 7 months, while the average time between renewals is 30 months under present conditions, or four times as long, although the same kind of flues are used now as before. The former average for the switch engines at Grand Island is given as 8 months, while an average of 36 months is reported since the new water supply was obtained.

The following table lists a number of locomotives chosen at random from the boiler records of 1916 and 1923 with their respective records.

RANDOM FLUE MILEAGE 1916-1923

Service	Period	Engine Number	Service Obtained Between Renewals	
			Months	Mileage
Freight	1916-1917	213	6	29,992
		227	6	25,048
		233	9	32,444
		238	8	35,841
Passenger		2808	9	47,362
		2833	9	44,110
		2840	8	34,580
		2842	9	39,620
Freight	1922-1923	1919	20	67,996
		1922	15	47,289
		1927	20	68,258
		1948	18	56,230
Passenger		2868	17	150,822
		2874	19	144,431
		2901	29	248,940
		2903	22	223,083

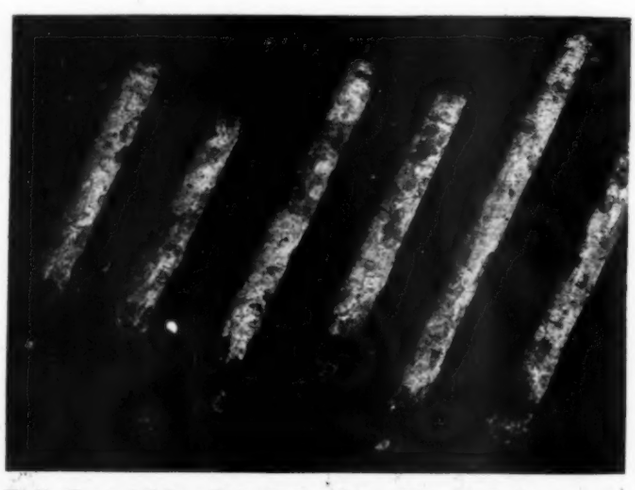
This compilation deals only with those cases where complete changes of flues were made. Disregarding the calendar time, which is significant but apt to be misleading, the table shows about double the life in the freight engines considered, and a much greater difference in the passenger mileage, all of the passenger runs listed having a flue mileage in excess of 140,000 miles and two with a mileage in excess of 220,000. The representative character of these figures is corroborated by more detailed records, particularly a compilation made of the average flue mileage for each class of engine owned in 1914, which shows the majority of all freight engine averages running below 35,000 miles and only one passenger engine with a mileage exceeding 100,000, and that a small engine.

The average mileage and renewal periods for all locomotives from the date of application of a set of new flues (new, and pieced and re-set) until they were removed is reported as shown in the accompanying table.

COMPARATIVE FLUE AVERAGES

Year	Passenger		Freight	
	Miles	Months	Miles	Months
1914	62,433	11	41,674	14
1921	98,112	16	54,963	17
1923	142,246	16	60,446	18

In this table the figures are given for 1921 to avoid the long locomotive run practice, as it appears that the lengthening of locomotive runs is having a decidedly beneficial effect in lengthening the life of flues through reducing the straining that results from less uniformity in operating conditions. It is improbable, however, that the increase in average flue mileage shown for the two-year interval is attributable entirely to the long runs; most of the engines are not as yet involved in such runs. It appears, rather, that the averages given for 1921 are not truly representative of conditions. But, nevertheless, they show a 50 per cent increase in passenger flue mileage and about a 40 per cent



Badly Corroded Stay Bolts Taken from a Wooten Boiler in 1904

increase in the freight flue mileage for the entire territory, although in some sections, particularly in western Nebraska, pitting conditions are still bad. Owing to the decrease in the number of flues per engine as the number of superheated engines increase, the total number of flues involved in the renewal work in 1923 was about the same as in 1916, notwithstanding the increase in the number of engines; the number of flue renewals in 1923 being 269,457.

Forty Per Cent Less Boiler Maintenance

In connection with the flue study, it was also noticed that flues are now running from one general shopping to the next general shopping, whereas formerly the bottom half of flues had to be changed every five or six months to keep the locomotive out of the shop until necessary for machinery repairs. It is found that engines are now marked good for 15 months' service before shopping as compared with 9 months before, while running repairs for flues are now about 40 per cent less than before water conditioning. The reputed effect of feed water heaters is not involved in determining the causes of increased flue life on the Union Pacific as there are none in service at present.

One of the principal evils of bad water is the interruption to actual train operation from delays and engine failures. Whether it arises immediately from foaming or from badly scaled boilers or leaking flues, it seriously interferes with the operation of trains, reducing tonnage ratings, slowing up schedules, and often requiring the maintenance of extra relief engines, if not adding to the hazards of operation. The

records of engine failures for 1916 and 1923 are given in the accompanying table, both for all districts and for one of the districts which was most troublesome.

COMPARATIVE ENGINE FAILURES

	North Platte District		All Districts	
	1916	1923	1916	1923
Total failures	149	57	1662	479
Flue failures	42	8	277	51
Boiler and firebox	37	3	213	35
Per cent.	53	20	30	18

Thus of 149 engine failures on the North Platte district in 1916, 79, or 53 per cent, were flue or boiler and firebox failures, while of 57 failures in 1923, the flue and firebox failures were only 11 in number, or 20 per cent of the total. The percentage of flue and firebox failures to the total on all districts decreased from 30 per cent in 1916 to 18 per cent in 1923, and flue failures alone decreased from 277 to 51 in number, or 80 per cent.

The flue failures per thousand engine miles were as follows:

1917	.0127
1923	.0019
Reduction	85%

It is obviously an impossibility to arrive at the actual saving produced by reducing engine failures because of the variety of conditions under which failures occur and their various effects, but considering the loss of time alone and taking the figure of $50 per engine failure, as estimated by the master mechanics in the territory, the saving in 1923 in this item would be about $20,000. Assuming every failure to cause an average delay of one hour the reduction in boiler and flue failures represent a saving of 17 locomotive days as compared with 1916.

The significance of the records of actual reductions in engine failure is sufficiently obvious to require no elaboration as affecting the strike period, when the Union Pacific, like other roads, was handicapped to the point of neglecting much of the usual attention given to power, but they assume a new importance when consideration is given to the growth of traffic on the Union Pacific. There has been a steady and marked increase in traffic as well as tonnage until 1923, the gross ton-miles showed an increase of 400 per cent over that for 1904 and the passenger train car miles an increase of more than 200 per cent, while the tonnage increase from 1,003 tons per train to 1,662 tons. With only slightly more mileage of line for this tonnage it is manifest that any factor contributing to reduce delays and failures is not without value.

Fuel Savings

Of all the benefits of water improvement work the most elusive is perhaps that of determining the saving in fuel. The situation on the Union Pacific presents no exception to the rule. It is a common practice to assume from a variety of experiments which have been conducted that one-eighth of an inch of scale in a boiler represents a loss of 15 per cent in fuel. In view of this the removal of 3,700,000 lb. of scale-forming matter from Union Pacific water in 1923 by water treatment, as compared with 1,500,000 lb. in 1917, to say nothing of a considerable reduction in scale by the proper use of boiler compounds, is significant.

Likewise it is futile to attempt any exact determination of the effect of improved water on tonnage, owing to the great change that has taken place in the type of power, particularly in the handling of freight trains, as well as the marked mechanical improvement which has been made to the end of increasing the efficiency of the power plant itself. But again it is believed on the Union Pacific that some of the increase is attributable to better water conditions for the reason that engines can be operated with heavier tonnage without trouble resulting or from the danger of leaky flues, injector trouble or the impediments on steaming power of a badly scaled boiler in those cases where an engine is working closely to its maximum output. If any increase has resulted, it is manifest that, like the reductions in engine failures and delays, the benefit is a substantial one in view of present tonnage ratings and traffic handled. The report that 30 per cent more tonnage is now being handled between washouts is also significant.

Improved Water Indispensable on Long Runs

Attention has already been called to the long locomotive runs and the inference left that the success of these runs attests to the improvements which have been made in water conditions. In the case of passenger runs, it is a fact, as has been remarked upon, that many of the worst waters are avoided. The new type of engines used, providing as they do a large reserve of power against adverse conditions, is also an important factor to be taken into consideration. It develops, moreover, that while water conditions west of Cheyenne are not of the best for an engine that has already traveled the distance between Omaha and Cheyenne, it is the difference in grades that constitutes the reason for not continuing the long run over the entire distance from Omaha to Ogden. Likewise on the Los Angeles & Salt Lake, two runs are made instead of one, because of the terminal conditions rather than the water, although the latter is troublesome. But there is no overlooking the conspicuous absence of trouble, chiefly foaming, that is met on these runs, as compared with the trouble of earlier years on less severe runs, particularly in freight service, as well as the less frequent shopping and terminal attention required, also that it is the prevailing water conditions that have controlled in the decision not to lengthen freight runs between Cheyenne and Ogden. There is basis, therefore, for the prevalent opinion on the Union Pacific that while the water improvement work was by no means indispensable to all of the long locomotive runs, even those on the plains, it is indispensable to some and is unquestionably beneficial to the others.

Organization Important

The organization charged with the chemical aspects of the water work comprises first the consulting chemist, who is on the staff of the general manager and has charge of the company's chemical and physical laboratory at Omaha, where he is also the engineer of tests. On the staff of the consulting chemist are four traveling chemists who are charged with the periodical inspection of treating plants. It devolves upon these men also to conduct various investigations in the field, to run down reports of trouble and look to their correction, and to ride engines in order to observe the behavior of the various waters and the nature of the results being obtained. In addition to these duties, they are also charged with the responsibility of checking up the use made of boiler compound. Periodical reports showing the number of engines, the amount of water taken and the amount of compound used are received by the chemists for their assistance in determining whether or not it is properly used. Experience has established the importance of this supervision in the use of boiler compound.

As an additional check upon the treating plant operation samples of water are shipped to the laboratory once a week for analyses, on the treated water, and at longer intervals on the untreated waters. The plant attendants, who are on the divisional pay roll, make daily tests of hardness, alkalinity and causticity of the water, and are required to fill in a daily report blank showing these tests, the time of treating, the amount of chemicals used together with the amount of stock on hand, any memoranda of repairs needed, etc. Copies of this report are furnished the consulting chemist, the divisional water service foreman (who is on the staff of the division engineer), and the traveling chemist in that

territory. The engineering department keeps the record of the cost of plant operation and maintenance.

The softeners are all of the continuous type with steel tanks extending to the ground. Special care has been given to provide ample settling time for all conditions and otherwise to design each facility to meet local conditions. In view of the growing tendency toward over-treatment, it is interesting to note that such treatment is not followed nor allowed on the Union Pacific. Indeed, random analyses suggest that slight under-treatment is prevalent, but until the number of treating plants is increased this practice lends itself better to the harmonizing of treated with untreated waters. When over-treatment was practiced, injector trouble was frequent.

To Overhaul Los Angeles Line

In view of the success had thus far in water treating work, the company plans to conduct future work along lines similar to that followed up to the present; correcting the worst spots first and gradually putting conditions on a permanent basis. For the present special attention will be given to the territory west of Ogden, principally on the Los Angeles & Salt Lake, which is now an integral portion of the system. This line, which comprises 784 miles of railroad, extending from Salt Lake City, Utah, to Los Angeles, Cal., is one of the worst water districts on the entire system, with many of the waters containing 30 or more grains of incrusting minerals, with a number carrying more than 15 grains of foaming salts and one water containing as much as 50 grains of this material. As a corrective measure, treating plants are already installed at six points, which, with the general use of anti-foaming compound under proper supervision, is providing a decided help, a long passenger locomotive run of over 460 miles now being made regularly on this line. Authority has already been issued for a general and immediate overhauling of this line, both as regards water conditioning and water supply additions. With the completion of this work, which is largely that of finding better quality water, the Union Pacific will have in operation 45 treating plants on the system, and it is expected that this district will afford the most striking object lesson in the beneficial effect of water improvement work on the system.

President Coolidge Opposes Government Ownership

PROPOSALS that the federal government take over the railroads and other public utilities were criticized by President Coolidge, in an address at exercises commemorating the 150th anniversary of the meeting of the First Continental Congress at Philadelphia on September 25, as representing an effort to reverse the principles on which the government was founded. He also said that such a step would result in a loss of public revenues estimated at $600,000,000 a year. That part of the President's address dealing with the question of public ownership is as follows:

"A significant circumstance of the First Congress, one which ought never to be overlooked, lies in the fact that it resulted from the voluntary effort on the part of the people to redress their own grievances and remedy their own wrongs. We pay too little attention to the reserve power of the people to take care of themselves. We are too solicitous for government intervention, on the theory, first, that the people themselves are helpless, and second, that the government has superior capacity for action. Oftentimes both of these conclusions are wrong.

"Everyone knows that our economic problems are very far from being solved. But we are making constant progress, both in the field of production and distribution. When certain abuses arose, we adopted a policy of government regulation and control. I have no doubt that some action of that kind was necessary, and of course such a policy would be continued. But it has not been, nor can it be hoped that it will be, always wisely administered. While it provides some defense against wrongdoing, its restrictions often hamper development and progress, retard enterprise, and when they fail to produce the perfection promised tend to bring the government into discredit. The real fact is that in a republic like ours the people are the government, and if they cannot secure perfection in their own economic life it is altogether improbable that the government can secure it for them. The same human nature which presides over private enterprise must be employed for public action.

Undertaking Too Large

"It is very difficult to reconcile the American ideal of a sovereign people capable of owning and managing their own government with an inability to own and manage their own business. No doubt there are certain municipalities where some public utilities have been managed through public ownership with a creditable success. But this is very different from a proposal that the national government should take over railroads and other public utilities. What a strain this would be to our economic system will be realized when it is remembered that public commissions set the value of such utilities at about $35,000,000,000, and that they have about 2,750,000 employees. Such an undertaking would mean about $1,750,000,000 annually in bond interest, and an operating budget estimated at about $9,000,000,000. These utilities are no longer in the hands of a few, directly or indirectly. They are owned by scores of millions of our inhabitants. It would mean a loss in public revenue estimated at $600,000,000 a year, and while in industrial states it might not increase the tax on the farmer more than 3 per cent or 4 per cent, in many agricultural counties it would run as high as 40 per cent. When we recall the appalling loss and the difficulty in the management of $3,500,000,000 worth of ships, we should undoubtedly hesitate about taking on ten times that value in public utilities. But this is no occasion to discuss the details of public ownership.

"I have mentioned the desirability for the people to keep control of their own government and their own property because I believe that is one of the American ideals of public welfare in harmony with the efforts of the first Continental Congress. They objected to small infractions which would destroy great principles of liberty. Unless we can maintain the integrity of the courts, where the individual can secure his rights, any kind of tyranny may follow. If the people lose control of the arteries of trade and the natural sources of mechanical power, the nationalization of all industry could soon be expected. Our forefathers were alert to resist all encroachments upon their rights. If we wish to maintain our rights, we can do no less.

"Through the breaking down of the power of the courts lies an easy way to the confiscation of the property and the destruction of the liberty of the individual. With railways and electrical utilities under political control, the domination of a group would be so firmly intrenched in the whole direction of our government that the privilege of citizenship for the rest of the people would consist largely in the payment of taxes. The fathers sought to escape from any such condition through the guarantees of our Constitution. They put their faith in a free republic. If we wish to maintain what they established, we shall do well to leave the people in the ownership of their property, in control of their government, and under the protection of their courts. By a resolute determination to resist all these encroachments we can best show our reverence and appreciation for the men and the work of the first Continental Congress."

Government Ownership of Railways and Utilities*

A Step Backward That Would Increase Cost for Poorer Service and Leave Employees Worse Off

By Herbert Hoover
Secretary of Commerce

SENATOR LA FOLLETTE'S party proposes government ownership and operation of railway and other public utilities. The senator emphasizes this: "I am for government ownership of railroads and every other public utility—every one." This means all railways, power, light, telephone and telegraph. The Republican party stands for private ownership, with the prevention of abuse through government regulation of service and rates or profits. Between them we must choose. Either we are to remain on the road of individual initiative, enterprise, and opportunity, regulated by law, on which American institutions have so far progressed, or we are to turn down the road which leads through nationalization of utilities to the ultimate absorption into government of all industry and labor. What the senator proposes is far more than a transitory experiment of government in business; it is a change in our social, economic, and political principles that will react to revolutionize our government itself.

The Proposition

In its immediate form this is a proposition that the government should buy and run the railways, electrical and other utilities, valued by official commissions at about forty billions of dollars, with two million seven hundred thousand employees, requiring two billions annually for bond interest, with an operating budget of ten billions per annum. To keep pace with natural growth these concerns must spend two billions of new capital yearly for extensions. This is a financial transaction and a venture into business of a magnitude never before undertaken by any man or by any government, democratic or otherwise—except in Russia. Surely before we embark on such a voyage we should look into the possibility of profit, examine the chart of the place where we are going, and consider the capacity of our vessel to carry the cargo.

It is for the American people to decide. If they are to decide rightly they should have the reasons set before them in terms of sober economic and social thought, not in vituperation and appeals to hate. I accredit the sincerity of the advocates of these propositions, and I believe they have the manhood to credit ours. There is but one consideration—public interest. If I believed for one moment that this adventure would reduce rates, that it would produce better service, that it would decrease taxes, that it would benefit the employees, that it would maintain discovery, initiative, and advance in the development of these services, that it would not wreck our democracy, that it would strengthen the foundations of social and spiritual progress in America, or even that it would do a few of these things, I would unhesitatingly accept this proposal, stupendous as it is.

But I do not believe it. I am convinced not only from the experience of our own country, but from the attempts made abroad, that government operation is a step backward in every one of these propositions. It is the negation of progress. America has found the true road of advancement in these enterprises through sustained initiative and equality of opportunity to our people with public control to prevent abuse. Our salvation consists in following this line with increasing intelligence and devotion.

Our Present System of Utility Control

Much of the present agitation is based upon conditions, not as they are today but as they were a generation ago. There were then great abuses that called for remedy. The Republican policy of public regulation and the historic moral upheaval to which Theodore Roosevelt contributed more than any one man cured the worst of these evils and created the machinery of government to meet the rest. Theodore Roosevelt was the enemy of government ownership and the advocate of public regulation.

There is scarcely a single utility today that is not under public control through some governmental commission, local or national. These commissions today fix the rates, the issues of stock, the time tables, the car service, the profits. Our great national water powers are reserved to the government through 50-year leases, under public control. And our commissions are not alone preventing abuse; they are maintaining initiative, enterprise, and progress in our railway and other utilities, as witness their enormous growth and constantly improving efficiency and service.

Regulation has, through stabilizing rates, reduced the cost of capital by increasing the security for the savings of our people. From this security and within our generation there has come a new tide, and that is toward popular ownership as distinguished from government ownership. These enterprises are no longer owned or controlled by a few. One of our great service corporations has nearly 400,000 stockholders, another over 200,000. The power companies have over 700,000, their bonds are directly and indirectly, through our mutual insurance companies and savings bans, in the hands of literally tens of millions of owners. A silent revolution is transferring ownership to the public. Moreover, the new generation of administrators of these enterprises has firmly grasped its responsibility to the public. Indeed there are deep and promising currents originating in our economic life driving toward a mutualization of public and private interest, employer and employee interest with promise of a new period in industrial development. There has been a genuine growth of business conscience and service, and this growth is far more precious than any amount of legislation. Of those occasional individuals who fail to manifest this sense of public responsibility I could speak with bitterness, for they are the real stimulators of socialism. Such men give the cause for the despair that government ownership is the only relief from their actions. But we do not put the whole people in jail because of occasional murders.

And from it all we have by and large evolved the best actual service to the people from utilities that there is in the world. It may not be perfect, but no one who has tried a European government railway or a telephone needs conviction of our superior service. Moreover, there is a diffusion of service and use among our people double and treble the proportions to the population of any other country. A larger proportion of our homes have electric lamps, a larger proportion have telephones. More of our people travel by rail and more miles. We ship more goods per person, and

*Radio address delivered from Washington, D. C., on September 29, and broadcast over nationally interconnected stations.

our workmen have more power at their elbow than any other workmen in the world. The wages in our utilities give the highest standard of living and comfort on the earth. If our utilities were dominated by the malignity that some contend these things would never have come about.

To whatever extent we have failed in control, whether it be through overcontrol or through insufficient control, it is a challenge to us to perfect our system. There have been mistakes and will be others. But I may say at once that if the American people have not the intelligence, if they have not the character, if they have not the political mechanism by which private competition can be maintained and yet abuse can be prevented, then they do not possess the character or the political mechanism by which they can undertake the gigantic operation of these enterprises.

Effect of This Undertaking Upon Our Democracy

Neither our national nor our state governments are planned or equipped for the task of government operation of utilities. Nobody ever tried it on our stupendous scale of a continent, but there are governments which, in their smaller scope, do operate in some fashion some of their utilities. Since it is always in worse fashion than ours, their example is no temptation to imitation, but it does illustrate that some governments, on some scale, in some fashion, can operate some of them. But none of them have ever attempted to operate all the utilities, nor does any one of them possess 15 per cent of our railway mileage, or 6 per cent of our power, or 15 per cent of our telephones, and so on.

I would also have you observe that these governments all have much more concentrated power and responsibility than we have ever been willing to grant to our government. The fathers purposely made our government to a different model, for a different task. They divided power and responsibility, where business must concentrate them. They thought liberty and individual rights worth safeguarding even at some cost of efficiency. But this very fact necessarily leaves to private enterprise many things which other nations can, if they prefer, do through government after a fashion. On the governmental side, the result has been one of which we are as proud as other peoples are envious. On the business side, the accomplishment far surpasses anything they know. Through the one, we have liberty; through the other, enterprise and decisiveness. Our form of government, which we have developed over 150 years, has assured us a measure of freedom and progress hitherto unparalleled in political history. The more we cherish it the less ready we should be to load it with a burden for which it was not built. To bear this load the Constitution would need to be rewritten in a score of places, until it was no longer our democracy. Above all it would change the major thought and purpose of our government into the making of money instead of devotion to the preservation of basic human liberties—a big enough job in these times.

The very first and fundamental difficulty that our form of government presents is the relation of the states to the federal government. For in our plan we conceive that liberty requires a great measure of decentralization in authority. If these public utilities are to be operated by the federal government we at once deprive the states of their measure of authority and control over railway, power, light and communication companies—we make the service in these states dependent upon the will of Washington, thousands of miles away. It is an impossible conception that we give the states the power to regulate the business of the federal government as they now regulate these services. Or are we going to divide the railways and power and communications into 48 systems, each ending at the boundary of its own state? Whichever we do will crack the timbers of our government.

If we pile these forty billions of business and two million seven hundred thousand employees upon the government, one of two things happens. Either the 530 members of Congress or the hundreds of members of state legislatures become their real boards of directors, or, as it has been claimed, these great businesses could be placed in the hands of non-partisan commissions or government corporations, somehow free from politics and the dead hand of bureaucracy. Neither alternatives will work. If we were to set up such agencies, so free from restraint of the Congress and legislatures as to accomplish these objects, we would have created gigantic despotisms controlling the well-being of our whole people—and incidentally, controlling the very election of our officials. As a matter of fact, we can do nothing of this kind if we are to maintain a democracy. We cannot have a democracy and deprive our elected representatives of their control of government investment, their power to fix salaries and wages, their independence in the investigation of the conduct of public officials. The reservation of any or all of these powers renders any kind of a commission subservient to the members of legislative bodies, no matter what the theory is. When they are subservient to elected officials, politics will be their daily need.

Above all, the members of our legislative bodies represent districts, states, parties, and groups of opinion. Each member is expected by his constituents to look out for their local or group interests first. They have to be elected upon the results they obtain. Partisanship, "log-rolling," and politics would be the inseparable accompaniments of administration. No great business can be efficiently administered by such a board or such a basis of choice. We shall convert business into politics, and surrender efficiency for spoils. If we distributed railway extensions as we distribute public buildings; if we located electric power plants as we locate reclamation projects; if we divided up public industries generally as we share river and harbor improvements and army and navy stations—then as surely as night follows the day facilities will be wastefully provided for those districts or groups which are politically strong, and they will not be adequately provided for the districts or groups that are politically weak.

Also these legislative bodies would have to deal with group pressures striving for favors in rates. The relative rates will affect the prosperity of every city and every section, every group and every industry. States, counties, farmers, town dwellers, every group of manufacturers will press their representatives to secure an advantage, and legislators will inevitably honestly favor their constituents. Every experience to date indicates that the taxpayer will pay for the resulting concessions. Because the government had not the courage to increase railway rates during the war the taxpayer made up a $1,600,000,000 operation deficit. A neighboring government yielded last year to the demand for lower rates on the government railways; it is paying the deficit from taxes today.

By this vast venture that is proposed to us we would at once increase the total of national and local officeholders up to about six millions. The rightful interest of this group is in higher pay, constantly better conditions of service, and better standards of living. The rightful public interest will be to hold down rates and taxes. These interests will clash, and their clash must fight itself out not on grounds of economic bargaining between labor and employer, but in the political arena. The voting strength of this mass of officeholders, their wives and dependents, will be over 25 per cent of the whole. It is the balance of political power between parties in every district. Either every member of the legislative bodies will be elected to do the bidding of this bureaucracy or will be elected by a public in rebellion against it. No commission or any body of administrators can carry on these vast operations efficiently in this political maelstrom. We shall lose most of our democracy in the storm.

Unless the federal or local governments can give the publi lower rates, there is no use undertaking the gamble.

If the government is to reduce rates it must do so either by the saving of private profits or by reducing operating expenses or lumping them on the taxpayer. During the past four years the railways have on average earned less than 4 per cent on the I. C. C. valuation. Even if this value were reduced by 25 per cent, they would have earned only 5 per cent. Our electrical utilities are regulated at earnings between 6 and 8 per cent upon their invested capital. The government could not borrow the huge sums necessary at less than 5 per cent.

In a sale to the government the constitutional requirements would for various legal reasons, probably result in a much larger sum than the forty billion dollars of present valuations by commissions and others.

Moreover, the wasteful distribution of the hundred and fifty million of capital invested annually in the Post Office, Reclamation Service, Shipping Board, rivers and harbors and roads, would not be a patch on the waste in appropriations when our legislative bodies get a chance to handle two billions per annum of new capital outlay. For all these reasons I am convinced that interest charges alone to the government would be larger than the present utility profits, and no economy lies there. Rather the way of the prodigal.

Nor can the government operate as economically as a private enterprise. If we take over nearly three million new employees into public service we must put them under an air-tight civil service, to be hired by a separate commission and promoted by seniority, and at once we have created a bureaucracy. Otherwise, we would have nearly three million jobs to be given out and a political debauchery unparalleled in all history. There are certain inherent qualities of bureaucracy in its deliberative action, the necessity to maintain joint responsibility, its enlargement of "red tape" designed to prevent error in judgment and conduct all of which are perhaps an advantage in purely governing functions, but they become disaster when applied to the rapidity of movement vital to business and service. Numbers increase for every task. The alternative is political favoritism. And at the top where exceptional talent and genius must be had, neither seniority, nor competitive examination, nor politics will secure or find it. It is one thing to choose a postmaster but another to choose a railway president. These things are the actual and daily experiences of our public life; and if a hundred years of this experience is not proof that the efficiency of government operation must always be below the efficiency of private enterprise, then the public is incapable of conviction.

We can get some direct experience of this loading of employees from government operated railways in the countries during the last ten years as to the results of these forces. For instance, the number of employees of Italian railways has increased 50 per cent against an increase in traffic of 18 per cent. German employees increased 20 per cent against 5 per cent increase in traffic. Danish employees increased 48 per cent with 20 per cent increase in traffic. Swedish employees increased 10 per cent with a 20 per cent decrease in traffic. Norwegian employees increased 62 per cent with an increase in traffic of 37 per cent. Compare these figures with American railways, where the number of employees is about the same today as ten years ago against a 10 per cent increase in traffic. American railways are the only railways on earth showing increased efficiency in the last ten years. If we had increased our employees by such percentages it would cost $600,000,000 per annum, or an increase of 10 per cent in rates. For the rates today are in the long view based upon costs.

With all these forces in action our cost of operation would increase. If we make rates to equal costs our rates will rise —not fall. Unless, of course, the taxpayer pays the deficit.

Nor will the public secure better or more impartial service under government ownership. The action of all government officials must be limited by a vast amount of regulation and "red tape." Therefore, government employees never can yield that spirit of accommodation that employees of private enterprise must furnish in order to maintain the repute of their competitive enterprise and its standing in the community.

A much larger issue lies in the inequality with which facilities will be provided over this continent 3,000 miles wide. It is mighty important to have cars and kilowatts when they are needed. The economic life of somebody is stifled every time they are not available. Every fit of national economy will cause them to fall behind future need. Every district and group of the politically weak will have to do without some measure of their need. Today there is remedy for failure in service; there is no remedy against the government.

Another question worth examining is the direct and indirect tax burdens which will be imposed upon the public, assuming always that rates pay operating expenses and interest. The addition of $40,000,000,000 to the national debt differs much from the debts of many thousands of private enterprises now comprised in these public utilities. The failure of a single private enterprise is a loss to its owners only, but with this entire investment transferred to the government every citizen would pay every loss of capital, directly or indirectly from taxes or rates, whether he liked it or not. When individuals enter upon a foolish project they pay for it, but if the government does the same thing both the foolish and the wise must pay for it.

Today the combined utilities contribute about $600,000,000 in taxes to the federal and local governments. It is unlikely that in government operation our federal government will pay taxes to the states or the states to counties out of utility rates. Thus the local governments would need to find other sources of revenue. If the customers of these utilities and the taxpayers were identical in their participation it would not matter, but it happens that utilities have a larger ratio of investment and taxes in the farming districts than they have in the big cities. It would damage the farmer of Massachusetts but 3 or 4 per cent to denude the state of utility taxes, but it would increase taxes 40 per cent in many agricultural counties in other states.

And above all, if the history of other governments operating utilities counts, the inefficiency in government would not be taken up in rate increases, by which the actual user pays, but by lumping it onto the taxpayer.

Employees Worse Off

The next question to examine is whether the employees would benefit by being incorporated into the government service. The first and foremost result of such an operation would be a dispute over the right to strike. It is by no means certain that a government can continue as a government and admit the right of government employees in vital services to strike against it. Nor can legislative bodies delegate the right to settle wages and salaries to any commission or they will have delegated their control over expenditures, which is one basis of democracy. In any event, under government ownership employees must in final analysis bargain with legislative bodies, and bargaining will rest not upon economic need or economic strength, but on political potence. The present federal employees, denying themselves the right to strike, have just now, after eight years, succeeded in getting some of their deserved increase in pay. The public utility employees have had them already for years. Their wages are today the highest real wage in the world. Some have assumed that the political strength of this great mass of employees will enable them to dictate the election of legislative members and thus secure their desires. This means the creation of another bloc, the arraying of class against class, perhaps the most dangerous tendency in our politics today.

It substitutes internal pull and external politics for individual endeavor. It puts a damper on achievement, a pre-

mium upon wire-pulling. It penalizes whole-hearted devotion to work.

But there lies even a broader issue of the ultimate results to the freedom of labor. Upon it I can do no better than to quote from Mr. Gompers in a speech at Montreal in June, 1920: "I believe there is no man to whom I would take second position in my loyalty to the Republic of the United States, and yet I would not give it more power over the individual citizenship of our country.

"It is a question of whether it shall be government ownership or private ownership under control. . . . If I were in the minority of one in this convention, I would want to cast my vote so that the men of labor shall not willingly enslave themselves to government authority in their industrial effort for freedom. . . . Let the future tell the story who is right or who is wrong, who has stood for freedom and who has been willing to submit their fate industrially to the government."

Invention Will Decline

The essence of progress is that we shall have new mechanical invention, new ideas in administration, new developments in service. The proposal that we are examining here would destroy all competition. By the same operation we destroy the competitive market for new invention and new ideas, for their value is determined by competitive bidding. *A* must sell his invention to the highest bidder. If *B* demonstrates unusual administrative ability he has an enlarged market for his services with competitors. The *C* railway experiments on a new improvement to attract customers. Neither Congress nor administrators can appraise the value of these things. The notion that men would give from a sense of public service will never be realized until we reach that dubious millenium when desire for individual distinction and reward hath passed away. America has made the most marvelous advance in the history of man in the technology and administration of transportation and applied electricity.

Can anyone believe that this invention, this courage, this application, this stimulation to genius that our nation has brought forth would ever have been developed under a board of directors of 530 members of Congress and hundreds of members of state legislatures? Government utilities in other parts of the world get their technology from us. So far as I am aware no single vital invention has ever come out of government-owned utilities. If we are to assume that there will be no more need for else than routine operation we may abandon this argument. But science is only at the threshold of its house of wonders. It may even solve methods of transportation that would cause the abandonment of railways to the taxpayer as it would have done to a nationalization of the stage coach.

Experience Elsewhere

The classic domestic argument against all this is the postal service. There are, of course, conclusive reasons why that service must remain a public function. And it does carry the mails well, at a cost probably 25 per cent higher than private enterprise could do it. But remember that the postal service pay no interest upon the vast sum of capital invested in its equipment and buildings. It pays no taxes on these structures. And how is that capital investment in public buildings distributed? Notoriously on the reverse of business principles. How are the rates allocated to different classes of service? By the pressures of organized groups. Postal employees are always in difficulties with their board of directors—that is, Congress—as to pay adjustments. We are here proposing to amplify the shortcomings inherent in the postal service in the direct ratio of the Post Office budget of $600,000,000 to an annual budget of $10,000,000,000 in the utilities, not with 300,000 employees but with 2,750,000 and a business of infinitely greater technology.

Our national shipping is a daily sample of all the arguments I have given, and more. We paid three billions of the taxpayers' money for a fleet—some part of it was truly for war purposes—but we have written it down 90 per cent in six years to $300,000,000; and if the accounts were based upon true costs with interest and depreciation, we should find that we were losing over one hundred million dollars of the taxpayers' money a year in operating it. Yet private shipping is earning profits. Nor is this the fault of the Shipping Board; it is inherent in the system.

Our government has some necessary power interests of its own. The building by the government of great control dams, as on the Colorado, the St. Lawrence and elsewhere, whose primary functions are water supply, or control of flood, or irrigation, or navigation, and where power is a by-product, is a far different thing from the government's going into power production and distribution as a business. Some of our municipalities are faced with these problems, and sometimes they also have a desire for business adventure, but the withdrawal of over 400 municipalities from efforts to run utilities are themselves indication that even under local concentration of authority the results are doubtful enough.

I could at great length enter upon a discussion of the costs and failures of government ownership and operation in our own and in other countries. I could display more facts and figures with regard to the Canadian, German, French, Italian and Australian government of railways. I could discuss the inability of the Italian government to find any buyer for its railways when it tried to get from under their intolerable burden. I could name states where government ownership has been brought about by owners and creditors to get rid of bad investments. I could compare the real accounts of foreign government adventures into power with those of our private enterprise. I could enter upon the tendency to disguise real results by accounting methods. I would show by example not alone the economic effect of government ownership but the effect upon government itself—and upon politics. I could even enter upon comparison with the complete nationalization of industry in Russia. But as grievous as all these failures have been, there is still the fact that it is our government and institutions and our people that we are dealing with and not those of foreign countries—and our institutions, designed more for liberty and less for business, would fare far worse.

We have constructed our government upon the theme that its major purpose is to preserve human liberty amid the changing social and economic scene. If we divert it to the changing of money we shall have lost sadly for the future.

And paralleling and paralyzing every argument against government operation is one insistent note. That is the preservation of the vital initiative and enterprise of our people. This is the mainspring of progress. Bureaucracy is the dead hand on initiative. Government can correct abuse without entry into business. If it can not, then democracy shall have failed.

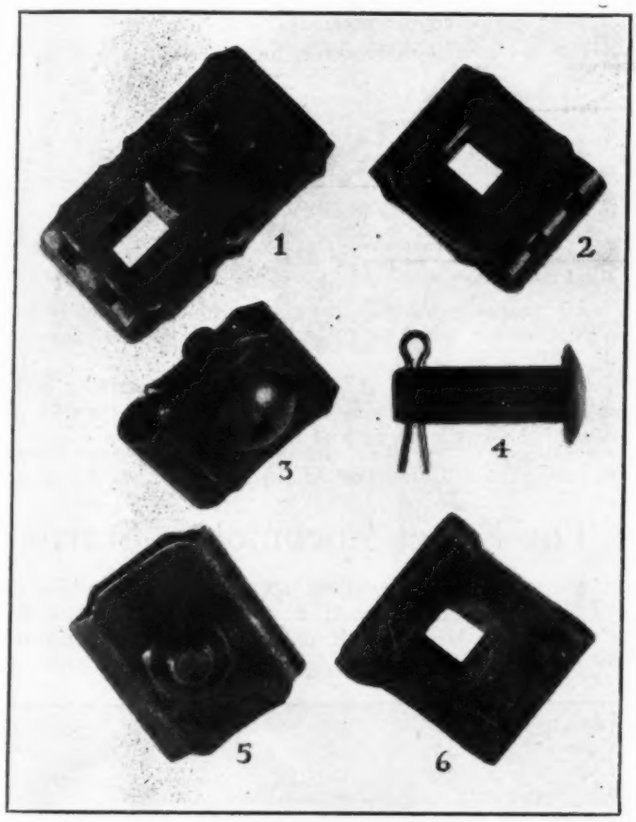
We are asked to abandon all that we have builded as a land of opportunity by injecting into it an economic patent medicine from Europe. Socialism may have a place with some of the nations of Europe because of their failures to provide freedom, opportunity, and service. It has no place with us. We are building here a form of social organization of our own. We differed with European ideals 300 years. We have today in America the widest extended and most efficient utility services in the world. We have developed an effective method of controlling abuses. We contribute more to invention and improvement than all other peoples combined. We are asked to abandon all this and embrace new social ideas, increase our cost of service, decrease our national efficiency, undermine our democracy, destroy the fundamentals upon which our nation has become great. This is not progressive, for it is not progress. It is destruction.

Contact System for Virginian Electrification

Entire Construction Including Contact Wire, Messenger and Fittings to be Non-Ferrous Material

By C. L. Hancock
Bridgeport Brass Company

A GENERAL announcement of the decision of the Virginian Railway to electrify its lines between Mullins, W. Va., and Roanoke, Va., came simultaneously with the report that a contract had been awarded The Westinghouse Electric & Manufacturing Company for the purchase of the necessary motive power and power generating equipment sufficient for the handling of its entire tonnage by electric locomotives. It was also announced that the propulsion system for the supplying of power to the locomotives would be a 22,000-volt single-phase line of the catenary type with a single contact wire and auxiliary feeder supply adjacent to the tracks, operating initially at 11,000 volts. The fact that this road, built to exceptional engineering standards, has always been noted for its operation with the largest capacity equipment and most powerful locomotives in the world, called for electrification with a big factor of safety in the overhead.



Modern Types of Clips. 1. Sheet Phono Clip, Norfolk & Western. 2, Sheet Phono Clip Used to Replace One-Bolt Cast Malleable Clip New Haven. 3. Same as No. 2. 5. Sheet Phono Clip, Norfolk & Western. 6. Cast Bronze Clip, Pennsylvania

Catenary Construction Developed on the New Haven

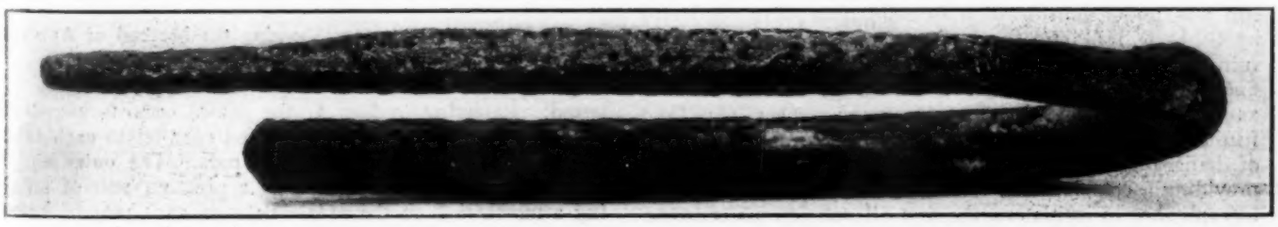
Early designs of electric locomotives and overhead contact systems had of necessity to be based on experimentation rather than actual operating experience and these facilities were modified as experience accumulated. Much of the progress that has been made is due to the operating experience of the pioneer steam roads that early adopted electrification. The New York, New Haven & Hartford is a notable example.

The first difficulties experienced on the New Haven were had very shortly after operation was instituted. Trouble was caused by hard spots at points of suspension of the contact wire and excessive wear of the copper contact wire throughout its entire length.

"Hard spots" were practically eliminated by installing a new contact wire directly under the original copper trolley wire suspending it with clips placed midway between the original suspension hangers. The result was that as no part of the trolley contact wire was held rigidly, the locomotive pantographs in passing under the wire found no point where the pantograph could pound and bounce.

Experience soon indicated that copper wire was too soft to resist the mechanical action of the pantograph and that it was necessary to find a material with greater hardness and toughness. Steel trolley wire seemed to possess these qualifications since conductivity was not important as there was a copper wire directly over it and clipped to it at intervals of ten feet. Corrosion troubles were not seriously considered since much of the steel wire then in service had been used only on street railway lines and then coincidentally in dry climates and away from corrosive gases. Apparently the answer had been found to both "hard spots" and long life, and the problem of electric operation of steam lines in so far as the distribution system was concerned was solved.

It was not many years, however, before a new and probably the most serious situation manifested itself. This was the corrosion of the messenger wire, hangers, clips and steel contact wire; it being most severe on the contact wire. The

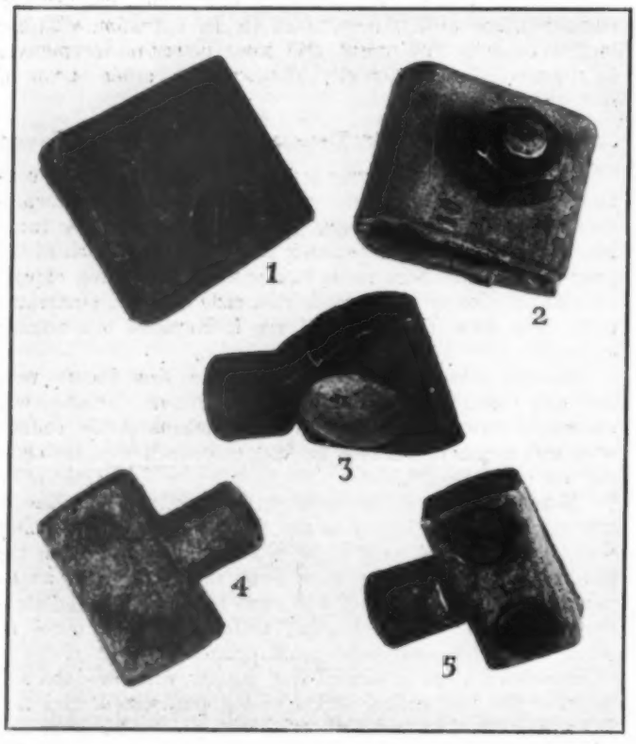


A Sample of 0000 Grooved Steel Contact Wire, Showing Combined Effect of Corrosion and Wear

trouble finally was determined to be due to a combination of atmospheric conditions and exhaust from the steam locomotives. This corrosion once well started developed rapidly.

Investigations were instituted to find a contact wire which would be non-corrosive and at the same time afford long life since the cost of removing from service long sections of tracks for wire renewals at relatively short intervals of time was recognized as a serious matter from an operating standpoint. Phono-Electric wire was selected by the New Haven for this purpose.

In designing the earlier overhead contact system, electrical engineers had in mind that where dual steam and electric operation was in effect, corrosion of ferrous portions of distribution systems would require some measure to prolong the life of the overhead material. Galvanizing and painting of all ferrous parts was resorted to which, of course,



Type of Clips Used on the New York, New Haven & Hartford. 1. Two Screw Galvanized Malleable Intermediate Clip. 2. Modified Intermediate Clip Which Replaced Two-Screw Clip. 4 and 5, Earliest Type of Galvanized Malleable Hanger Clip. 3, Modified Hanger Clip Which Replaced Two-Screw Clip

somewhat retarded the corrosion but under normal conditions did not last more than five years. Subsequent painting seriously interfered with traffic and also was expensive.

Virginian Adopts Non-Ferrous Construction

Consideration then began to be given to the possibilities of using non-ferrous material for messenger wires and fittings. When the Virginian electrification distribution system was under consideration investigations were conducted by Gibbs & Hill into the merits of this product. As consulting engineers and contractors for that railroad, they finally recommended the use of Phono-Electric contact wire and in addition Phono-Hi-Strength messenger wire and further decided to employ Phono-Electric for the fabrication of hanger rods and messenger clips throughout, thereby providing a complete non-ferrous catenary system from pantograph shoe to insulators, the first all non-ferrous construction of its kind in the country.

On account of the high currents which the grades and extraordinarily heavy trains will require, it was found necessary to provide additional conductivity over that available with the usual type of catenary construction and this was supplied by the use of a composite cable made up of Phono-Hi-Strength strands for tensile strength and special hard-drawn copper wires stranded together to provide both adequate strength and conductivity. The use of composite messenger cables for use in catenary construction is the latest new development in the railroad field, though it has been used for transmission lines for a number of years. The coefficients of expansion of Phono-Hi-Strength and copper are practically identical. This simplifies to a considerable extent the possibilities of composite cables for the Virginian overhead construction.

The present plans call for wire made up as follows:

A composite cable composed of 19 strands, the outer layer of hard drawn copper wire.

The seven wires composing the core cable shall be as follows:

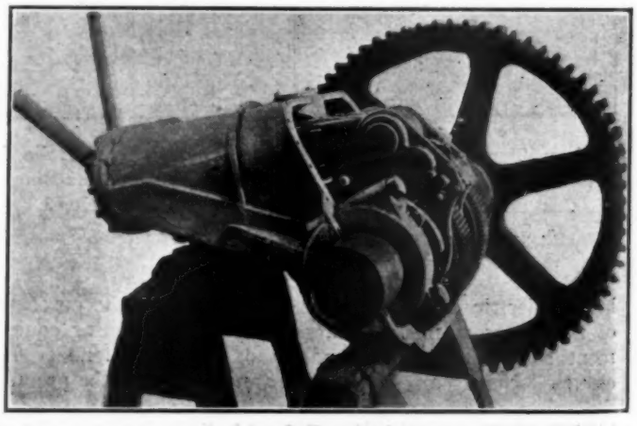
Item	A	B	C	D
Strands high strength bronze	7	7	7	7
Strands hard drawn copper	12	12	.....	.....
Diameter of wires, inches	.145	.111	.124	.147
Breaking strength, complete cable, pounds	25,000	15,000	10,000	14,000
Size of cables, approx. dia.	.725	.555	.372	.441
Resistance per 1,000 ft. at 20 deg. C.	.0399	.0676	.741	.528
Equivalent circular mills copper	270,000	159,000	13,900	19,650
Weight per 1,000 ft., lbs.	1,236	723	332	467
Min. length of cable on reel	3,000'	2,600'	4,200'	3,000'

All composite cable is to be stranded concentrically with a pitch of not less than 12 and not more than 16 times the diameter of the layer.

Tests upon sections of individual wires containing brazes made before final drawing must show not less than 95 per cent of the tensile strength of the unbrazed wire.

The Street Locomotive Starter

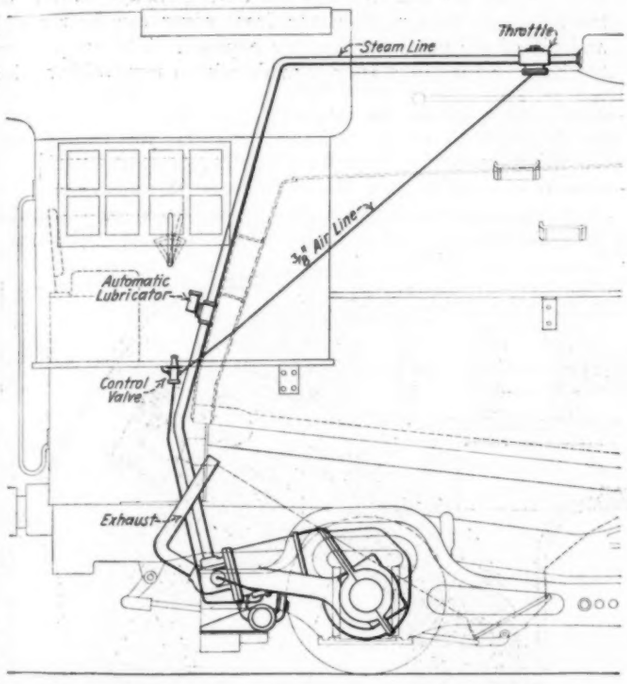
A LOCOMOTIVE STARTING DEVICE has recently been developed by Clement F. Street, Greenwich, Conn., which is the result of four years of experimental work, during which time nine machines were built and



A Side View of the Starter Showing the Method of Applying to the Trailer Axle

tested. Referring to Fig. 1, the device consists essentially of two cylinders which are arranged parallel to each other, with their pistons and connecting rods. The outer end of each connecting rod is secured by a pin to a pair of swinging arms carried on the axle. Between each pair of swinging arms is a ratchet wheel pressed and keyed to the axle,

and a ratchet is pivoted to each pair of arms, as shown in Fig. 2. This ratchet is held out of contact with the ratchet wheel by a spring. The cylinder casting has two bearings



Drawing Showing the Application of the Starter to a Locomotive

formed on the front end, outside of the arms, to carry the weight of the front end of the starter. The back end is carried by means of a flexible support to the truck frame. This method of carrying the cylinders is similar to that used in supporting street railway motors.

Steam is admitted to one end of the cylinders only and consequently the back end of the connecting rod is pivoted directly in the piston which makes possible a short, light construction. Owing to the use of this trunk type of cylinder, only one valve is used and this is placed in the rear cylinder head. This is of the plain piston type. It is thrown by steam pressure and has no mechanical connection with other movable parts of the starter. A nest of flat circular springs in the valve chest head furnishes a cushion for the valve to strike against at each end of its stroke.

The novel feature of the motor is the method of coupling together the two pistons by a cross lever pivoted to the cylinder casting, so that when one piston is driven forward by the steam pressure it pulls the other piston back. The stroke of the piston when working is about 8 inches. Just before the piston reaches the outer end of its power stroke, it uncovers a port in the cylinder and admits steam through the valve chest head to one end of the valve which reverses its position. This cylinder is thereby opened to the exhaust and steam is admitted to the other cylinder. This operation is continuous as long as there is steam pressure in the valve chamber.

The two cylinders with the valve, their pistons and cross lever connection make an operative machine which will run with the connecting rods disconnected. The cross connection between the piston, with the absence of cranks and fly wheels, eliminates the need for a governor as the motor cannot run beyond a speed of 150 strokes per min. Owing to the absence of cranks, the pistons must be reversed at the end of their stroke by a steam cushion and a balancing speed is reached when the time required for stopping the pistons and starting them in the opposite direction, after the valve has been reversed, becomes equal to the time required for

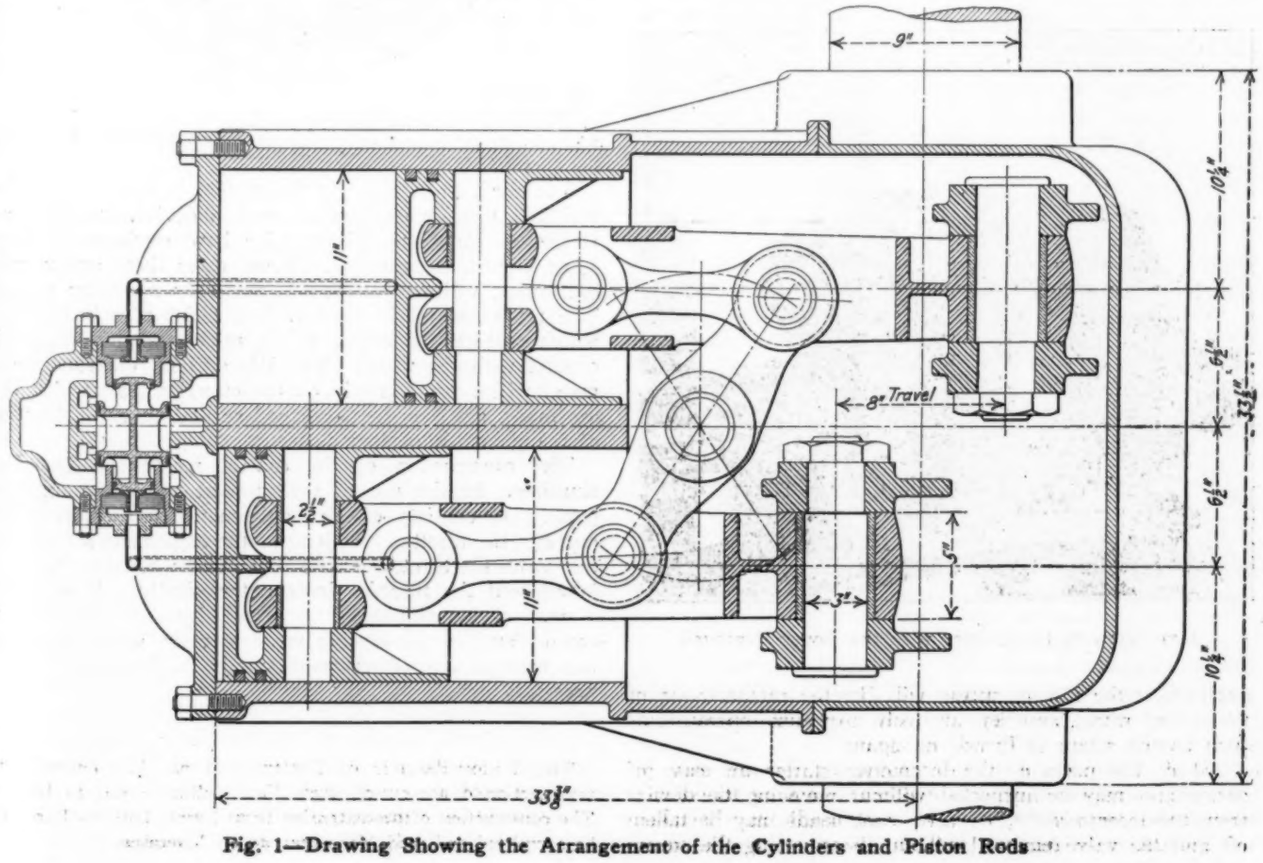


Fig. 1—Drawing Showing the Arrangement of the Cylinders and Piston Rods

their long travel between port openings. An increase in the weight of the moving parts would reduce this maximum speed and a reduction in their weight would increase it.

The ratchets are normally held out of contact with the ratchet wheel by springs. Steam pressure, when admitted to the cylinder, is also admitted to a small cylinder above the ratchet for that cylinder and forces it down in contact with the wheel. It remains in this position as long as there is pressure in the main cylinder. When the pressure in the main cylinder is reduced to exhaust, the pressure is also reduced in the ratchet cylinder and the spring lifts the ratchet clear of the wheel. The machine is thus always ready for action, with no preliminary throwing of clutches or shifting of gears. When the steam pressure is cut off from the starter the parts come to rest in whatever position they may be in, except that the ratchet spring will lift the ratchet clear of the ratchet wheel, and they are ready to resume operation as soon as the steam is turned on again.

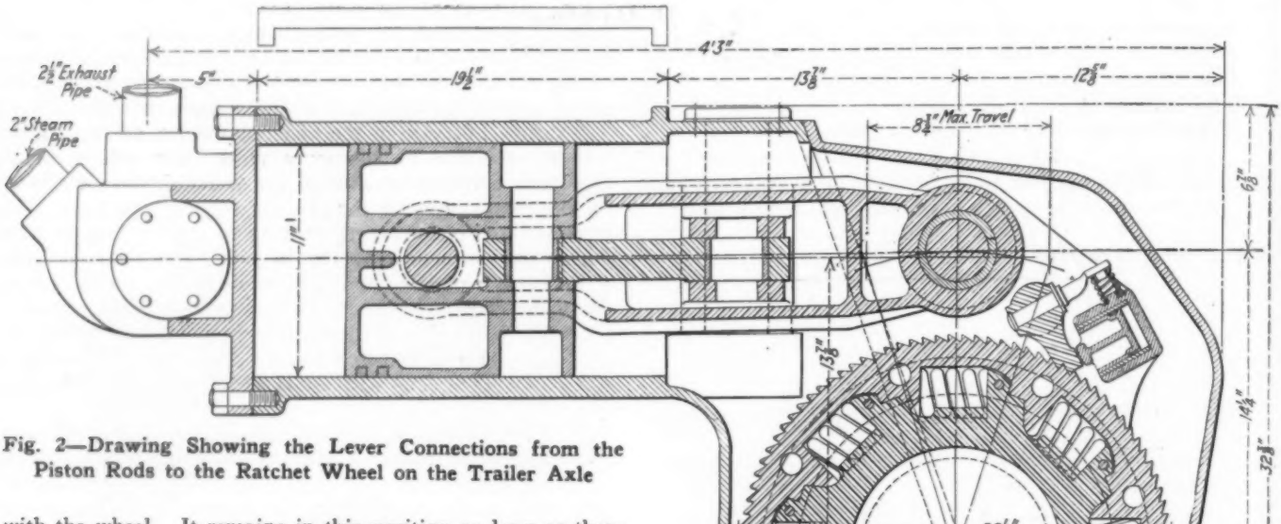
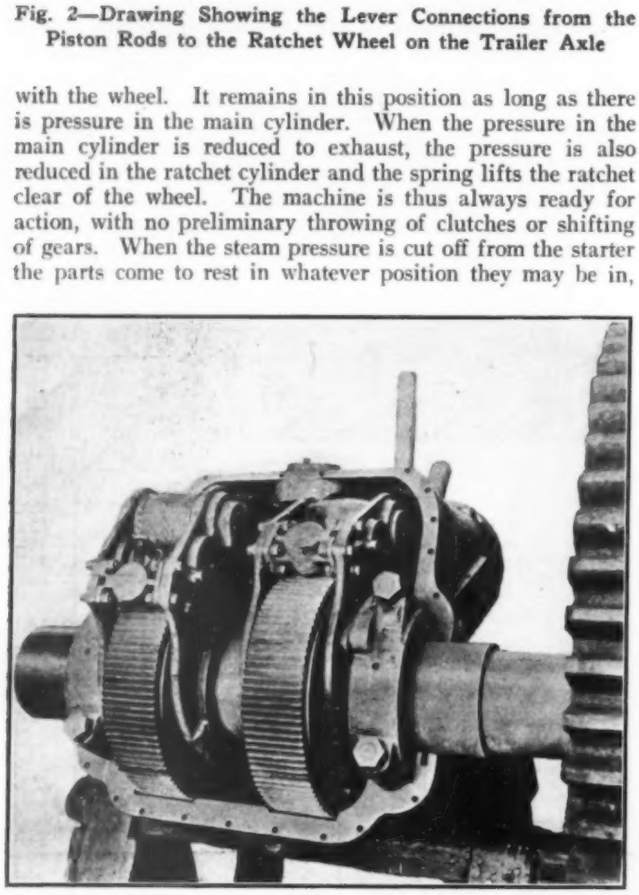


Fig. 2—Drawing Showing the Lever Connections from the Piston Rods to the Ratchet Wheel on the Trailer Axle



Rear View of the Starter with the Cover Removed

All of the parts of the locomotive starter are easy of access and may be inspected without removing the device from the locomotive. The valve chest heads may be taken off and the valve removed without disconnecting the steam or exhaust pipes or disturbing any other part of the starter. In order to inspect or remove the ratchet and its attachment the locomotive can be run over a roundhouse pit and the back end of the machine lowered until it hangs entirely on the axle. In this position the front cover can be removed and all of the parts on the axle exposed. The support for the back end of the starter is made with a removable section which can be taken out in case it is desired to lower the back end.

The work to be done by the ratchet is heavier than that which is usually required of such a device, but there are at present in use machines which have ratchets that carry loads almost as heavy. In many cases these are running constantly, while the starter is run only for short periods. The ratchet wheel is fitted with a series of coiled springs which cushion the action of the ratchet when it comes in contact with the wheel. The life of both the ratchet and wheel will depend largely on the material from which they are made, and both are designed so that they can be made of a high grade of forged steel.

The construction of the control mechanism has been simplified by the use of the smallest possible number of parts. It consists of an engineman's foot valve which operates the throttle. As long as the engineman's foot is on this valve the throttle remains open and when the foot valve is released the throttle closes automatically. If desirable, a small air pump which has been designed for this purpose can be applied for closing the foot valve when the starter has reached a predetermined speed; this, however, is not necessary.

THE UNION PACIFIC on September 1 put into operation the first section of its cut-off from Fort Collins, Colo., to Buckeye. The construction of the extension from Crane, Ore., to Burns will be completed and ready for operation on November 1.

The Railroads as Factors in Business*

Railroads Aid Business Through Good Service Offered and Through Purchases of Manufactured Products

By C. H. Markham
President, Illinois Central

THE CREED of the American Bankers' Association is based upon the broad principle that "what is best for the nation is best for banking." Allow me to paraphrase that, as regards my own line of business, by declaring that our American railroads are conducted on the broad principle that what is best for the nation is best for the railroads. The solution of our railway troubles will be certain, I believe, when the public comes to recognize that fact.

I am not the one to become unduly alarmed when there is no danger, but I believe our transportation system is bound to suffer, to the great detriment of business, unless all of us develop a renewed understanding of its place and its purpose in our national life.

As factors in business our American railroads cannot be ignored. There are 265,000 miles of them, which is approximately a third of the entire railway mileage of the world. Their property value is more than twenty billion dollars, which is about half the property value of our manufacturing industries and a fourth that of our farms. They employ two million persons—about one wage earner out of every twenty in the country. They spent in 1923, for labor and materials, about six billion dollars, and in the same year they paid more than $336,000,000 in taxes. The fuel bill alone of the railroads in 1923 totaled about $600,000,000, as compared with an expenditure of approximately $556,000,000 for the entire operation of the Postoffice Department, the largest business enterprise of our government, during the fiscal year ending June 30, 1923. In 1923 the American railroads carried more than four hundred billion tons of freight one mile, and they carried more than thirty-eight billion passengers one mile.

Railroads Essential

These figures show that our railroads constitute a gigantic business and that we make good use of them. No other country in the world depends so much upon its railroads as we do. We are better supplied with railroads than any other country in the world that has distances comparable with ours, and we must give our railroads most of the credit for maintaining the complicated agricultural and industrial organization our nation has built up. Without the railroads our business would have to withdraw into isolated communities; our country, economically and politically, would break apart. In ancestry, in ideals and in manners of living, we are not naturally a united people. Our union has been developed and is being preserved by our efficient transportation service. The fact that our channels of communication have been so good is the reason that we suffer so little from differences in dialect, in customs and in habits of thought as compared with other large nations of the world.

Fundamentally, therefore, the complexion of business in this country, more than in any other country, is what the railroads have made it. Whether they have made it so for good or ill is a question occasionally discussed; there are still inequalities; readjustments in railway rates and service even today are likely to necessitate changes in the location and in the movement of business; but there is little doubt that the railroads have worked to the best interests of the country in developing the relationship of agriculture and industry and foreign trade along the lines now in effect. We have not, it is true, constructed our railroads with an eye to their military uses, as has been so often the case in Europe, but we have built them up so as to serve most efficiently what we have regarded as the great needs of our national commerce, and in that way, I believe, we have done our people the greater good.

Our railroads are highly important factors in business; first, because of the essential service they render; second, because of the helpful expenditures they make; third, because of the lesson they give as to the necessity for good credit; and fourth, because they are in the front line of defense against those who would make this country a second Russia in the matter of government ownership.

The Ready Servant of All

Every day we are reminded of what the railroads mean, in transportation service, to the business of our country. Just now there is a revival of prices for farm products. But what is the factor that makes good prices of immediate advantage to the farmer? That factor is his servant, the railroad, which is ready and waiting to carry his products wherever he so wills. The availability of good transportation is what gives most of the value to farm products under our present system of marketing, and the development of the railroads, of course, was what made our modern markets possible. Instead of selling at his local station or at the county seat, the farmer now sells at the great markets of the land, where prices bear a close relationship to those in the other great markets of the world. The farmer therefore should be the greater defender of the railroads whenever his existence is threatened directly or indirectly.

An example of this has come to light in Illinois recently. Farmers have taken over and are operating a small electric railroad that had threatened to suspend operations because of bankruptcy. Faced by the prospect of no service at all, the farmers protested vehemently, and when it came to a showdown they put their own money into the project in order to prove their appreciation of what railway service meant to them. This proposition, fortunately, does not have to be faced by most farmers, but it illustrates the fundamental principle I spoke about a while ago—that it is more important to keep the railroads running than to quibble about how they should be run.

Service Cheap and Good

The essential service rendered by the American railroads is cheap, judged both by the loss that its absence would occasion and by the comparisons that can be made with railway rates elsewhere and with the retail prices of the commodities moved. Figures for the Class I railroads of the United States—the roads with operating revenues of at least a million dollars a year—show that the average ton of freight was carried a mile last year for slightly more than 1 cent and 1 mill. The average passenger traveled a mile on these railroads last year for almost exactly 3 cents. These are rates which cannot successfully be challenged anywhere in the world, when the local buying power of that amount of money is considered in connection with the character of the

*An address delivered by Mr. Markham before the American Bankers' Association in Chicago on October 1.

service rendered. In the retail price of practically every commodity, the freight rate is an infinitesimal matter. Seldom can it be honestly quoted as a factor one way or another in the retail price. Wheat and flour travel from 500 to 1,000 miles for less than half a cent to make up a 15-cent loaf of bread. The average meal can be assembled for a freight charge smaller than the price of a red postage stamp. A $5 hat can travel from New York to Chicago by freight for almost exactly half a cent. A 30-cent purchase of California fruit made here in Chicago will be found to include a freight charge of not to exceed 3 or 4 cents. And so on. By every method of comparison our railway rates cannot be termed excessive. They have been lower than they now are, but so has been nearly everything else; the relationship has not changed perceptibly; if our railway transportation is not cheap, then nothing in this country is.

This railway service, moreover, is being rendered well. Last year, in the greatest traffic our country has ever known, there was practically no shortage of cars or locomotives with which to move them, and the ability of the railroads to handle the business offered them was worth many millions of dollars to the nation's business men. Efficiencies are constantly being worked out, and the benefit is being given to the public. In the last four years the railroads have reduced their operating expenses nearly $5,000,000 a day, and they have passed on to the public in reduced rates and increased taxes, nearly $400,000 a day more than that. During recent years the railroads have carried a passenger traffic greater than in 1915 with an actual decrease in the number of passenger trains operated. In the same time the operation of heavier freight trains has made possible a great increase in freight traffic with but a small increase in the number of trains. The number of ton-miles produced by the railroads in 1923 was 23 per cent greater than in 1915, but the number of freight train miles was only 4 per cent greater and the number of freight car miles only 13 per cent greater.

Roads Better Than Ever

These figures may be perplexing to the layman. My intention in citing them is merely to indicate that the railroads are being more efficiently operated now than they ever were. Similar figures are easily obtainable as to the greater production of transportation service per man employed, per thousand dollars of investment, per ton of coal used, and so on; but I shall not weary you by running through them all. By every test we know of, our railroads are better today than they ever were. You older bankers can prove that by observing the service rendered and by comparing it with the service rendered twenty or thirty years ago.

Better railroads, moreover, mean a wider circulation of money. The railroads are among the best spenders our nation has. In 1923 they paid out about three billion dollars for labor and two billion dollars for materials just to keep themselves running, and they spent more than a billion dollars for additions and betterments in preparation for the future. That spending was at the rate of nearly $55 a year for every man, woman and child in the country. The railroads consume more than one out of every four tons of bituminous coal produced in this country. They use 30 per cent of the iron and steel output, 25 per cent of the lumber output and great quantities of other commodities of all kinds. They contribute, directly or indirectly, to the success of nearly every line of business. By paying more than $300,000,000 in taxes a year, they take a great load off the remaining business of the country. It is well to remember that point when the proposition of government ownership comes up. Government ownership would mean tax exemption for the railroads.

When the railroads are running to capacity, their current expenditures help greatly to keep all other industry and agriculture prosperous. What they make, they spend. So large a percentage of the railway dollar is promptly returned to the channels of trade that it is no exaggeration to say that busy railroads do proportionately more for the stimulation of business in general than any other one factor that can be named.

A Stimulant to Business

But probably the greatest service the railroads can render business through their expenditures is—or should be—their ability to stimulate business revival in times of depression by making large expenditures for permanent betterments to their plant. You are all familiar with the argument that public improvements should by all means be kept up in times of business depression and general unemployment. The same argument can be and should be applied to the railroads. When the railroads are free from the pressure of heavy traffic is the very time that they can best attend to the business of building up their facilities to handle the rush that inevitably follows every lull. When the railroads are able to obtain the money, they do that very thing.

Railway freight traffic has increased more than 800 per cent in the last forty years. It has more than doubled itself since 1903. Railway facilities, of course, have increased greatly, both in number and in capacity, but not at a rate to keep the pace set by traffic. Extraordinary efforts last year saved the nation from a transportation shortage, and in making those efforts the railroads incurred additional debts of more than a billion dollars. The spending of this money, of course, did much to stimulate business, but vastly greater amounts must be spent in the future, to the vastly greater stimulation of business in general, if the railroads are to keep pace—as they must—with the growth of the country.

In order to raise the vast amount of new capital essential to future progress, the railroads must have sound credit. Their 800,000 stockholders and their almost equal number of bondholders must be assured of fair treatment, if the necessary new bonds and stocks—preferably stocks—are to be disposed of successfully on the financial market. The great problem of our American railroads under private ownership, overshadowing even the problem of adequate service, is the problem of credit. Good credit is fundamental to good railroading. It is both the cause and the effect of good railroading. Without good credit, without public confidence, in the integrity of their stocks and bonds, the railroads cannot take a forward step.

Need for Adequate Earnings

Good credit means, first of all, that the railroads must have adequate earnings—adequate not only at times, but constantly adequate. Inadequate earnings have hampered the railroads sadly in the past. Part of the trouble has been due to the fact that the public has not comprehended certain differences between what the railroads sell and what other producers sell. It is not fair, for example, to contrast the current adequacy of railway rates with the current adequacy of prices on the farm. The railroads cannot cancel off good years against bad, as most producers can. Their product is not one that can be kept. They must pay as they go. The railroad sells service. The farmer sells commodities. Service must be sold as it is produced, or it has no value. Corn, wheat and livestock have a definite value as long as the farmer cares to hold them, and very often they are enhanced in value by his very foresight in keeping them in reserve.

It is not possible for a railroad to keep its service in reserve as a cashable asset. The railroad must produce its service regularly whether it is utilized to capacity or not. Every idle seat on a passenger train and every empty freight car is a distinct loss to the railroad. Once a train has made its run, the service it rendered is a closed account, upon which the railroad cannot draw in the time of need.

Because of this situation, the modern railway manager must be like the expert banker described by your president, Mr. Head, in a recent address on "The Twentieth Century Banker." According to Mr. Head, "Bankers of the twentieth century cannot merely be bookkeepers, tellers, cashiers, lenders of money, or even a combination of all of these raised to the nth degree. To be bankers today, bankers must be more than bankers. They must be economists. They must be sociologists. They must be business men, versed in industry and in commerce. They must be psychologists, knowing human nature. They must be statesmen, understanding politics, with a knowledge of international affairs. The banker must read men as well as statements of financial worth. He must know world markets as well as local markets." And so on, the reason being that the fundamental impulses behind certain things must be understood as well as their surface indications, if the banker is to use his lending power for the security of his clients and for the well-guided upbuilding of his community.

The up-to-date railway manager, likewise, must be no less the student of men and of world affairs. The successful railway manager to day is the man who can see beyond the immediate future, who can keep in close touch with his public, who can understand the needs of his patrons, the rights of his investors and the aspirations of his employees and balance them off, one against the other, so that justice may be done to all and so, at the same time, that the priceless jewel of the railroads under private management—their credit—may be conserved.

It seems highly proper to me to be talking about credit at a meeting of bankers. Credit is confidence, trust, belief and as such it is the foundation of your business as well as mine. You may think you are lending money, but what you really are giving to the borrower is the confidence, the encouragement, the support that your depositors have given you by trusting you with their cash. Your depositors believe in you because you have not made away with their money in the past, and you show your belief in the borrower because you have reason to feel, after a study of what he has done, that he will pay you back, and not merely eventually but at the appointed time. The prospective borrower who has defaulted in payments previously is not likely to find favor at your hands, even if you did escape loss by cashing in on his security.

Under private ownership, the railroads of the United States do not have the ready access to Uncle Sam's pocketbook that they would have if the government owned them, and therefore they have to seek their funds for betterments very largely as individual merchants do by borrowing or by selling an interest in the company. To accomplish such financing, confidence is essential. The prospective shareholder or bondholder must be made to feel that he is placing his money not only in an essential business but in a paying business as well.

Public Controls Railroads

But who must create this feeling of confidence? Who says whether or not the railroads shall make money? The entire income of the railroads is determined by the Interstate Commerce Commission, a government body, which sets the rates that they may charge for their services, and more than half of their outgo, the wages paid to labor, are determined by the Railroad Labor Board, another government agency. The people, therefore, control all of the income of the railroads and more than half of their outgo. To say that railway regulation determines three-fourths of the financial standing of the railroads is to put it mildly. The return earned by the railroads is so largely controlled by the relationship between what the Interstate Commerce Commission does and what the Railroad Labor Board does that railway credit is almost entirely dependent upon their thoughtful, well-considered and carefully co-ordinated action.

The public therefore can make or break the railroads, not merely because of its direct control over the railroads but primarily because it has such a complete although indirect control over railway credit. This power has not always been wisely or foresightedly exercised by the public in the past. The idea behind most of our railway regulation has been to safeguard public interest immediately, without any apparent thought to the future safeguarding of public interest by building up strong railway credit. That is why the railroad manager of today, in order to safeguard railway credit, must be a student of humanity and of world conditions, even more than a student of the science of railroading. There has been something fundamentally wrong in the attitude of the public toward the railroads in the past, and it is not to be cured by fighting fire with fire. Railway regulation is here to stay. In many of its phases it is a desirable thing. To oppose it in its momentarily mistaken phases is, it seems to me, largely a waste of time on the part of railway managers. Such faults as railway regulation has are the faults of public misunderstanding, for which railway managers themselves have been largely responsible in the past. The root of the trouble must be reached, and then the trouble will disappear.

What we need is intelligent preparation for the future. The public must be encouraged to develop railway credit, which is a phase of national thrift. The man who will lay aside his own dollars for a rainy day certainly ought to support candidates for office who are pledged to do the same thing nationally by allowing a fair return to the railroads that will develop their credit and give us better railroads all the time. There is no more mystery about thrift in its national aspect than there is about thrift individually. It is just a case of looking to the future and cutting down a trifle on present enjoyments. We invest—somewhat sparingly, it is true—in an army and navy, not because we feel that they are needed right now, but because we realize that, until human nature changes greatly, they will be needed sooner or later. If we have no concern for the future, we might as well spend the army and navy money for something else or leave it in the pockets of the taxpayers. If we have no concern for the future, likewise, it will be all right for us to hold down the return earned by the railroads to a point that will ruin their credit, but we must now later complain that we do not have the railway efficiency we ought to have.

The public must be educated as to the broad principles of national thrift if we are to continue to have good railroads under private operation. To spread such understanding is the most helpful thing that you, as bankers, can do for sound railway credit—and, therefore, for good railway service. Show your friends and business associates that the public is best serving itself when it treats the railroads well and that it is hurting itself most surely when it seeks what at best can be but a temporary advantage for itself at the expense of the railroads. Point out, in short, that what is best for the railroads is best for the nation, to paraphrase again the creed of your association.

Government Ownership

There is, of course, an alternative urged by some. That alternative is government ownership. It likewise can be supported or opposed on broad principles and on patriotic grounds. The broad principle is whether or not our people desire more government in business and eventually all government in business, which is communism. The patriotic grounds to be considered are those of the greatest good for the greatest number, which constitute the essential principle of democracy.

Our nation has developed as the great defender of the

rights of the individual. Private property is the cornerstone of our industrial structure. Our precedents have consistently been opposed to encroachments by our federal, state, county and municipal governments into the fields competitively served by private business. We have had to regulate many private businesses, including the railroads, but we have always managed to avoid confiscation. We have never favored government ownership as a national policy, and therefore we have never been called upon to decide definitely just how far it should go. If the railroads are taken over by the government, we must face the fact that the big step in reversing our old and settled policy will be taken and that there will be no stopping the force once we have let it loose. If there is no particular reason why the government should not own and run the railroads, is there any reason why it should not take over also the banks, the stores, the factories, the farms, until all of us are government employees and the ideal of the soviet is attained?

The railroads, as I have said, are in the first line of defense against those who would make this country a second Russia. The largest business enterprise of our government at present is the Postoffice Department, which has about 300,000 employees. The railroads have about two million employees, more than six times as many as the Postoffice Department. There are approximately as many employees on the railroads now as there are in all the government services—federal, state, county and municipal—put together. If the railroads are taken over by the government there will be one government employee out of every ten wage earners in the country, instead of one out of every twenty, as at present. If this one great step is taken into government ownership, how can any other industry in the country feel that it is safe?

Then, too, there is the matter of taxation. In spite of the reduction just put into effect, the federal taxes are still far from light, and there are heavy taxes collected by the states, counties and municipalities. The railroads, under private ownership, are among our heaviest taxpayers. Last year they paid taxes amounting to $3 for every man, woman and child in the country. In some counties, particularly in the Middle West, the railroads pay from 10 per cent to nearly 50 per cent of the taxes collected. Under government ownership, the railroads would be no more subject to taxation than the postoffices now are. In some way the government would have to make up the difference of $3 a head for every person in the country. In many counties, the taxes on the remaining property would have to be nearly doubled. The result would be an unbearable burden that might force many of our local governments to stop payments on their bonds and to go into bankruptcy. The tax problem would be a great deal more vexatious than it is today.

Would Increase Debt

Then, too, the acquisition of the railroads would add more than twenty billion dollars to our national debt, already the largest ever carried by any nation no longer in existence than ours. If government railroads in this country were no more successful than they are today elsewhere in the world, the interest on that twenty billions of purchase price would be the cause for additional burdens on the taxpayers left to carry it. As the tax burden developed, it would not be surprising to see other industries welcoming government ownership for themselves. They would gain immunity from taxation in turn, and their owners probably would be protected from loss. The Constitution prevents the confiscation of private property, and government ownership can be accomplished only by paying a fair price for the properties taken over. You will understand, therefore, that I do not oppose government ownership of the railroads on behalf of the present owners of the railroads, many of whom would obtain safety in government bonds in return for securities which have not paid a return in many years.

I oppose government ownership of the railroads because I believe that it would be bad for our people as a whole. It would open the way to government ownership of everything, and at the same time it would certainly lead to the wrecking of our highly essential railway service if the lessons of experience offered by other nations mean anything at all.

It would be hard to keep politics from influencing promotion on government railroads, and it would be hard to have expenditures directed without thought of political expediency. With competition abolished, the incentive to render satisfactory service would very largely be gone. What would happen to the morale of the employees and to the confidence of the people in the railroads would not be hard to imagine. That operation would be much more costly would be inevitable, for the necessity of making a satisfactory showing as to earnings would no longer be recognized. If the receipts equaled the expenditures, without consideration of a surplus for paying indebtedness or applying on depreciation, the success would be greater than that achieved on most government railroads, and the certainty of having to go into the public treasury to pay for improvements would not be considered a failure.

From the standpoint of rates, wages and earnings, government railroads nowhere in the world can be compared with the railroads under private management. If private purchasers could be found, many government railroads would be turned over to them today. Under the reparations settlement, Germany has recently voted such a move. Italy has been looking for such an opportunity for some time. Great Britain returned its railroads to private ownership promptly after the war. In France, the only one of the seven great systems losing money in 1923 was the one owned by the state. In Canada, which is our handiest example, government railroads have a long history of failure, and in 1923, when a slight earning was noted, the government road making it had higher rates, lower wages and a much smaller return than its largest privately owned competitor.

The experience of others should teach us that ventures into government ownership of railroads do not pay. The intelligence of the American people certainly can be trusted, it seems to me, to profit by the lessons thus held up before it.

We cannot afford to experiment with our railroads. They are among our most valuable possessions. Many other nations envy us them. Treated fairly and encouragingly, they will pay us returns many fold in the service they will render the constantly increasing prosperity of our nation in the years to come.

Gilliams

A Scale for Weighing Axle Loads in Use in England

Daylight Racks Facilitates the Efficient Arrangement of Stock

Store Methods on the Norfolk & Western

Modernization on This Road Has Brought About a Large Reduction in the Material Investment

By J. W. Wade
General Storekeeper, Norfolk & Western, Roanoke, Va.

SECTIONALIZING, unit piling and the new improved stock book record have ceased to be experiments with the Norfolk & Western. To maintain stock and have it available when needed, and to do this with a minimum

A Casting Wharf at the Roanoke Shops

investment, are the primary duties of the stores department. The storekeeper must know his stock and maintain a stock book record based on actual inventory. It has been proved that by use of the new methods, the following conditions have been brought about:

(1) Fifty per cent time saved in taking monthly and semi-annual inventories.
(2) Absolutely correct stock taking.
(3) Conservation of space.
(4) Reduction in stock.
(5) Prompt filling of requisitions from outlying storehouses.
(6) General economy in cost of stores department operation.
(7) General improvement of conditions in storehouses and material wharves.
(8) Proper protection of materials.
(9) Psychological effect on employees from seeing materials properly cared for.
(10) Prompt disposition of obsolete materials.

Stocks Cut from Eight to Five Million Dollars

A check on the stock on hand and issues from the general storekeeper's accounts from January, 1921, to April, 1924, shows the following figures: In January, 1921, the stock on hand in round figures represented $8,000,000; disbursements for that month amounted to $2,000,000. In January, 1922, the stock on hand amounted to $5,500,000; disbursements for the same month represented $1,000,000. In January, 1923, the stock on hand amounted to $4,500,000; the disbursements were $1,200,000. In January, 1924, the stock represented an investment of $5,000,000; disburse-

ments amounted to $1,500,000. The April, 1924, stock balance shows less than $5,000,000, represented in materials and supplies with a disbursement for the same month of approximately $1,000,000.

The main storehouse on the Norfolk & Western is at Roanoke, Va. Branch storehouses, to meet the requirements of local conditions, have been built at different terminals where sufficient work is done to warrant carrying limited supplies. There are 23 of these branch or local storehouses on the system, mainly serving the motive power department.

FORM G. S. 60

DESCRIPTION FRAMES: NORFOLK & WESTERN RAILWAY COMPANY
STANDARD HAND LANTERN, COMPLETE WITH FOUNTS AND BURNERS, BUT WITHOUT GLOBES AND WICKS, PER N&W DRAWING B-22448, REV. 3-28-23

ITEM No. 17-470
UNIT EACH
WEIGHT PER UNIT
PURCHASED X SHOP MADE

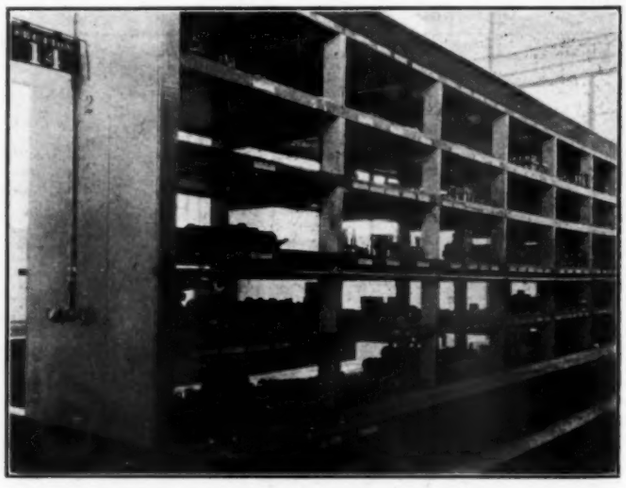
MONTH	ON HAND / DUE / OWE	QUANTITY ORDERED / REQN. OR S. O. No.	YEAR 1924 — MONTHLY CONSUMPTION 400 — QUANTITY RECEIVED AND DATE	ON HAND / DUE / OWE	QUANTITY ORDERED / REQN. OR S. O. No.	YEAR 1925 — MONTHLY CONSUMPTION — QUANTITY RECEIVED AND DATE
	300	300	300			
Jan.	1200	14	2			
	0	258	23			
	0	300	300			
Feb.	900	14	4			
	108	1167				
Nov.						
Dec.						

PURPOSE REQUIRED FOR STOCK
ENTERED ON AUTHORITY OF

A Sample Sheet from the Stock Record Book

Supplies for the divisions are issued by supply cars. There are four of these cars in service, two on each general division. One of the cars carries oil, the other miscellaneous supplies, such as stationery, tools, etc., for agents, operators,

One of the Storehouse Racks at Lynchburg, Va.



A Close-Up of One of the Standard Material Racks

At the Roanoke shop, where the main storehouse is located, some manufacturing of parts is done for both new equipment and repairs. Supplies issued from the general or an outlying storehouse to the local shop are given out direct from the storehouse distributing counters and must be accounted for by the stores department. It is the duty of shop employees, when securing material from the storehouse, to give a regular material ticket showing the name of the article and the proper account to which the material is to be charged. A similar arrangement is in effect at all outlying storehouses.

pumpers, signal maintainers and section foremen. These cars are accompanied by one man on each general division and move over the divisions by local freight once each month. The division superintendents are furnished with a schedule showing the movement of the cars over their divisions, and they arrange for the agents, section foremen, etc., to meet the supply cars, thus avoiding any delay to the local trains from this source. The supply cars, when going over the divisions, gather up all old tools from the sections and bring them into the general storehouse to be delivered to the shops for repairs.

A Section of the Shelving Showing Unit Piling

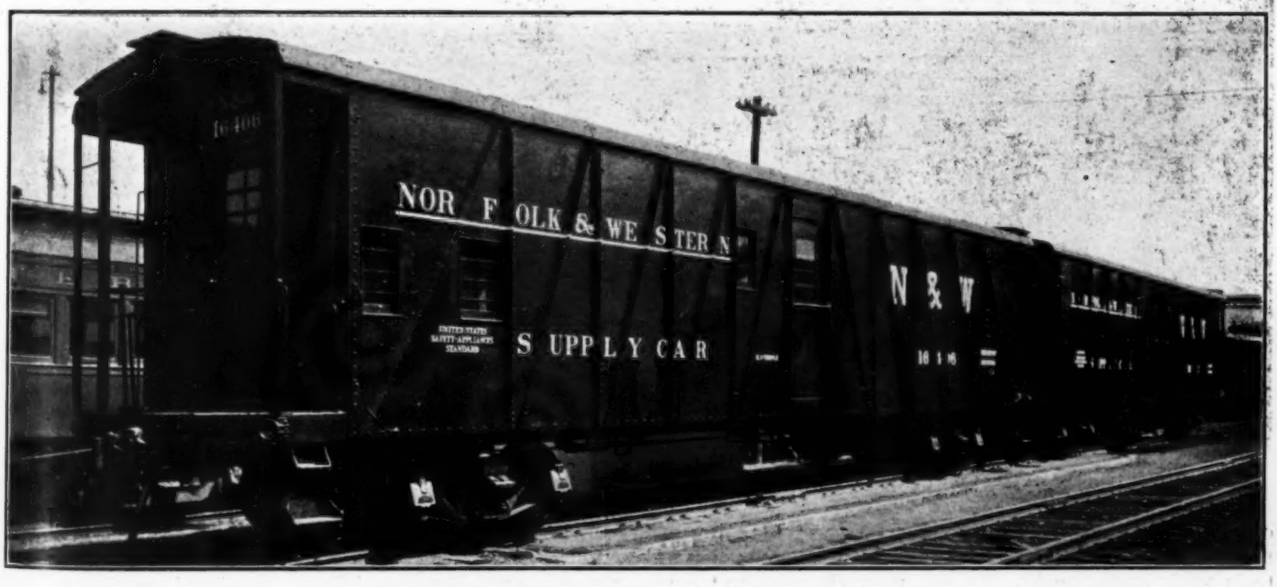
All Obsolete and Excess Material Was Eliminated

When the management decided to sectionalize general and sub-storehouses in order to meet the increased demands due to the growth of the road, a check was instituted of all material stocks, new, secondhand, scrap, etc., on the system. First a check was made of all stocks at the general storehouse and shops at Roanoke, Va., disposing of obsolete material by scrapping such items as could not be converted economically into serviceable parts. Following the check of the general storehouse and shops, an inspection was made of all outlying storehouses and shops, and their stock was handled in the same way. In two years' time, approximately, $250,000 of obsolete material, and approximately $300,000 of excess material had been handled.

With the advent of the section arrangement a complete rearrangement of stock was necessary. After considering all known practices, it was decided to sectionalize the general storehouse at Roanoke and then have the smaller outlying points arrange their stock in conformity therewith. All items of a similar nature were segregated and section numbers assigned to them. Sufficient space was given to the storing of such material but no provision was made for the further placing or storing of material in racks or bins other than those definitely assigned.

A total of 17 sections were created, certain classes of materials being assigned to each section. Thus, we have a section for iron castings, one for malleable and steel castings, one for air brake parts, tools, hardware, etc., one for stoker parts, valves, etc. Stockkeepers were appointed to take charge of the material in each section. It is the duty of the section stockkeeper to know his stock and maintain a stock book record of all items under his jurisdiction, based upon the rate of consumption and a forecast as to requirements. It is also compulsory for the sectional stockkeeper to take a monthly inventory of every item in his section and enter the information in his stock book, which, with previous consumption and forecasts, is used as a basis of all orders. For this purpose, complete stock record books have been provided and the unit piling system has been installed, thus enabling a stockkeeper to tell at a glance the correct quantity on hand.

The basis of the unit piling system is the tray which is made at a very nominal cost, and often out of scrap metal roofing. Materials in racks or bins are carefully piled on these trays with a designated amount in each. This method cares for items in such a way that every available inch of space is utilized. It permits bulky items to be stored neatly, and eliminates the necessity of sub-dividing the racks into innumerable pigeonholes.



Division Supplies Are Issued by Supply Cars

The improved stock record books are classed according to sections and each sectional stockkeeper has charge of the books containing the items in his respective section. Approximately 60,000 items were originally carried in stock

at the general storehouse, but since the inauguration of the new methods this stock has increased to approximately 75,000 items. The form used in the improved stock record book provides for two items (one on each side of the sheet) and for sufficient space for two years' ordering. To provide a stock record for each item requires approximately 37,500 sheets of this form. Numbers have been assigned to all items and they are listed numerically and alphabetically in the stock record book. Bin tags have been placed on all bins and these tags include item number and sufficient specifications, as shown in the stock record book, to enable the stockkeeper to locate the items in the stock book readily. Items in each section are also arranged alphabetically and numerically in the racks and bins. This enables the section stock man to check stock without having to move from one extreme of the storehouse to the other. The materials are arranged so that the items follow in the regular order in the stock record book as the stockkeeper moves up or down the aisle between the racks or bins.

Complete specifications are given on the stock sheets, so that when requisitions are placed with the purchasing agent, there is little chance for incorrect or insufficient information being given. This enables the manufacturers or jobbers to furnish exactly what is required. These specifications are being revised constantly and new items are also being added to stock. For this purpose a stock record bureau has been created whose duty it is to see that new sheets covering the revised items are sent to all storekeepers for insertion in their stock record books. In this way, all concerned have complete and up-to-date specifications covering items carried in stock at their storehouses.

The same method which is used at the general storehouse is carried out at the outlying points, although it is not necessary for the latter to include complete specifications on their requisitions as shown in the stock record books. It is essential, however, that they show the item number and section number. Revised requisition forms have been provided for this information and when requisitions are received at the general storehouse, from the outlying points, it is a very simple matter to fill them correctly when the section and item numbers are shown thereon.

This system also precludes the possibility of materials being ordered by many different names. Everyone knows that the shop employees have varied names for many items which are sometimes hard to connect with the correct specifications as carried at the general storehouse.

The system has also been found very beneficial when hurrying materials by telegram, inasmuch as it reduces to a minimum the number of necessary words essential in wiring for materials. Heretofore when wiring for a piece of material it was necessary to include complete specifications in the telegram. Since the new methods have been inaugurated all that is necessary is the quantity, section, item and requisition number of the part desired. As an illustration: Before installing the new stock record books, sectionalizing and the unit piling system, a telegram for a piece of material would read:

"Send by first passenger train two wrought iron piston rods, finished, for ash pan cylinder, Class M locomotive, DWG D-6081, revised May 24, 1916, requisition 1520."

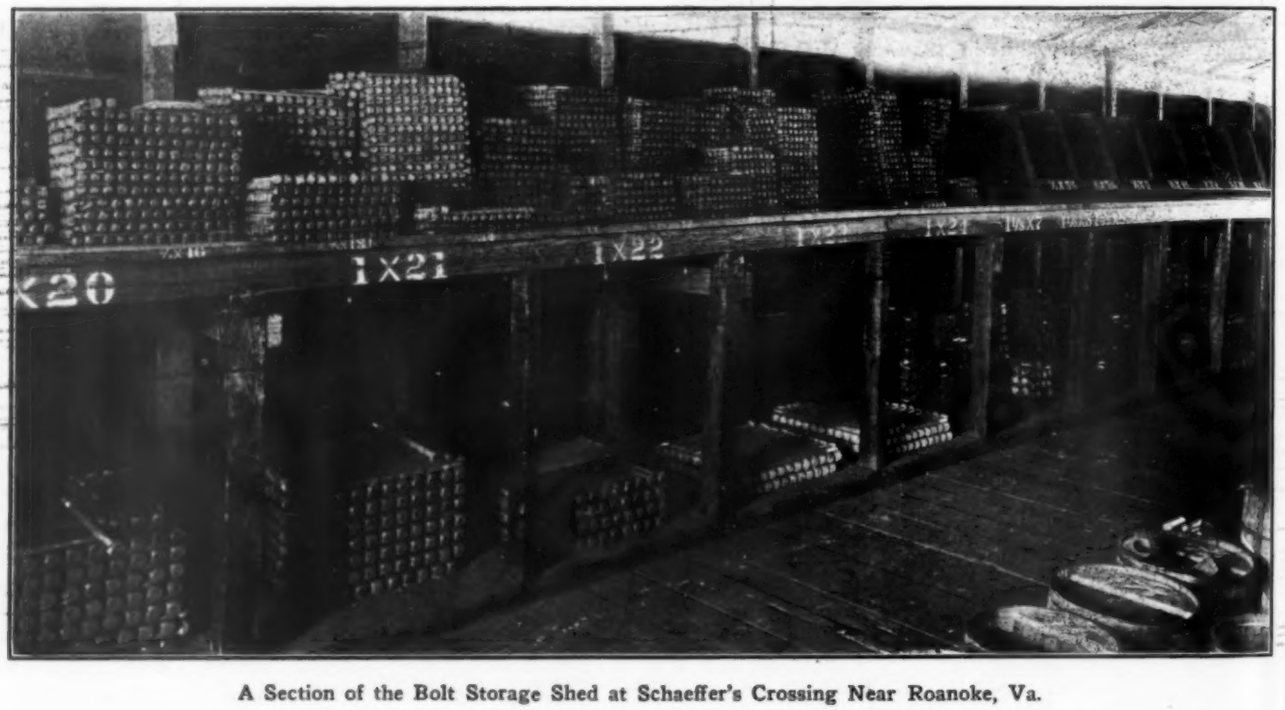
This same item is shown in the improved stock book records in Section 14, item number 1947; therefore, all that is now necessary to secure the item is:

"Send by first passenger train two Pcs Item 1947, Section 14, requisition 1520."

This example, by no means, illustrates the item representing the longest specification, as some items in the new stock book cover 10 or 12 lines in the specification alone.

Space has been provided on shipping bill forms, which are sent out when materials are furnished outlying points, showing the item numbers and section numbers. This enables the outlying storekeeper to check properly all incoming shipments against his requisitions and further aids him in placing the items received in their proper places in the storehouse.

The storekeepers on the road all appreciate the benefits of the improved methods and are working faithfully to install them in their entirety in order to bring about the desired results. Meetings of storekeepers are held monthly and the head sectional stockkeepers attend frequently in order to get the views of others in regard to the working conditions of the new methods.



A Section of the Bolt Storage Shed at Schaeffer's Crossing Near Roanoke, Va.

Effect of Reduced Rate Mileage or Scrip Tickets

E. L. Bevington Shows Improbability of Enough Increase in Traffic to Offset Reduction in Revenues

WASHINGTON, D. C.

THE HEARING before Commissioner Meyer and Examiner Keeler of the Interstate Commerce Commission on the question of what rate the commission shall find to be just and reasonable for interchangeable mileage or scrip coupon tickets was brought to a close on September 26 with the understanding that another hearing may be necessary on November 17. The principal witness for the railroads was E. L. Bevington, chairman of the Transcontinental Passenger Association, who presented a statement to show the extreme improbability of any increase in passenger travel to result from a reduced rate coupon ticket sufficient to offset the reduction in passenger revenues, in part as follows:

Any form of reduced rate mileage or scrip ticket good for nation-wide use on all the railroads of the country will inevitably result in a substantial reduction in passenger revenues, the extent of which will vary, according to the percentage of reduction from the one-way fare and the denomination of the ticket. A low-denomination ticket would increase the substantial loss which would result from the sale of a high-denomination ticket.

In 1921, eight per cent war tax was still added to all passenger fares. This tax was withdrawn January 1, 1922. Notwithstanding this, the gross passenger revenues in 1922 were $77,662,985 less than in 1921. As showing that this horizontal reduction of eight per cent did not stimulate travel, and that apparently it had no effect upon it, it is stated that the gross passenger earnings in 1922, during which year no war tax was collected, were $169,804,669 less than the gross earnings in 1921, plus the war tax. In other words, during the year 1921 when the war tax of eight per cent was added to the transportation charge, the public paid 15.8 per cent more for transportation than in 1922, when no war tax was added. It should not be overlooked that the cancellation of this tax was equivalent to making a horizontal reduction of 8 per cent in passenger fares on all carriers in the United States, but instead of stimulating traffic, the passengers one mile in 1922 were 1,842,744,937, or 5 per cent *less*, than in 1921. In 1923, when the fares were the same as in 1922, the passengers one mile were 2,536,080,971, or 7.1 per cent *greater* than in 1922. If, notwithstanding a horizontal reduction of 8 per cent in passenger fares, the results for the following year showed a 5 per cent decrease in travel, it is clear that a horizontal reduction of 10 per cent or even 20 per cent would not stimulate travel sufficiently to make up even a fraction of the tremendous loss which would be entailed by such reduction.

This clearly demonstrates the fallacy of the theory that a horizontal reduction in passenger fares stimulates travel. The reverse was the effect for the four months following the withdrawal of the war tax. There was a falling-off in both passenger revenue and passengers one mile in the first four months of 1922, when the 8 per cent war tax did not apply, as compared with the first four months of 1921, when the war tax was added to the passenger fares.

The total passenger revenue for the first four months of 1922 was $60,183,381 less than for the corresponding period in 1921, the figures being: 1922, $321,375,783; 1921, $381,559,164. The passengers one mile for the first four months of 1922 were 1,771,677,000 less than for corresponding period in 1921, the figures being: 1922, 10,398,651,000; 1921, 12,170,328,000.

The complainants in this case contend that a horizontal reduction in basic fares or a far-reaching reduction, such as the sale of a scrip book at 20 per cent less than normal fares, would involve, would stimulate travel to a point at which the carriers would derive greater revenue than prior to the reduction. The carriers unreservedly state that this does not work out in practice.

Transportation is a commodity; it is bought and sold like any other commodity. Its volume fluctuates with general economic conditions. If the country at large is prosperous, traffic increases. If there is a general depression throughout the country, travel decreases.

Exhibit 65, presented by Mr. Wettling, substantiates the position of the carriers and shows that the volume of travel bears close relation to the population, as it increases, but that there is little or no relation between the volume of travel as expressed in passenger miles and the average rates per mile.

Generally speaking, passenger travel increases in proportion to the increase in population. In 1912, 1913, 1914, 1916, 1921 and 1923 the ratios show that increases in population and in passengers carried one mile varied less than three points, and in some of these years, the ratios were almost identical.

The comparative ratios for annual "turn-over" in the United States and passengers one mile also bear relation, *but there is little or no relationship between the increase and decrease of passengers one mile and the average revenue per passenger mile.* Some of the heaviest increases in passenger miles have been made when the average revenues per passenger mile were the highest.

In 1911, the average revenue per passenger mile was 1.964 cents; passengers one mile, in round figures, 32,375,000,000. In 1913, the average revenue per passenger mile was 2.002 cents; passengers one mile, in round figures, 33,875,000,000. In 1915, the average revenue per passenger mile was 1.979 cents, a small fractional reduction from the average revenue per passenger mile in 1913—yet there was a reduction of over 2,000,000,000 passenger miles in 1915, as compared with 1913, when the average revenue per passenger mile was higher.

In 1921 the average revenue per passenger mile was 3.333 cents (including commutation, surcharge and war tax); passengers one mile, in round figures, 37,312,000,000. The following year, 1922, the average revenue per passenger mile was 3.027 cents (including commutation and surcharge); but, notwithstanding this substantial reduction, the passengers carried one mile fell off nearly 2,000,000,000 as compared with 1921.

In 1923, the average revenue per passenger mile was 3.019 cents (including commutation and surcharge), practically the same as in 1922, but in 1923 the passengers one mile increased approximately 2,500,000,000, as compared with 1922.

The extraordinary volume of travel in 1917, 1918 and 1919 was in part due to military movements to and from camps and ports of debarkation and embarkation. Demobilization carried over into 1920, which was, of course, an abnormal year in almost every respect as an aftermath of the war.

From time to time the complainants have stated that an interchangeable scrip book is necessary in the conduct of their work, for the following reasons:

(1) To save time in checking baggage.
(2) To save time in purchasing tickets at crowded ticket windows.
(3) To avoid the necessity of carrying large amounts of cash for transportation.
(4) To enable commercial houses to keep an accurate record of the itineraries of their salesmen, etc.

The conclusive answer to all these arguments is that the present form of scrip book meets all these requirements, yet its sales, as compared with total revenues, amount to less than 1 per cent.

Complainants undertake to convey the impression that if granted a reduction of 20 per cent, or 2.88 cents per mile, and 25 per cent of the total traffic, including the commercial travelers, should take advantage of the scrip book reduction, they would pay something higher than the average rate per mile paid by the other 75 per cent of the travel. In their petition for rehearing, they state that this excess payment by the commercial travelers would be four one-hundredths of one cent per mile.

Their conclusions are inaccurate for two reasons: First, they include commutation and the surcharge revenue, which should be excluded, since they would not be affected by the sale of a scrip book. Second, they conclude that 25 per cent of the traffic (or 8,878,445,500 passenger miles—1921) pays 3.6 cents per mile, or $319,624,038.00, which, deducted from the total earnings of $1,075,627,190.00, leaves $756,003,152.00 as the total amount paid by the remaining 75 per cent of the traffic. By deducting 25 per cent of the total passenger miles (which they claim pay 3.6 cents per mile) they get 26,635,336,500 passenger miles as the distance traveled by the remaining 75 per cent of the traffic; that mileage divided into $756,003,152.00, as established above, yields 2.838 cents per mile, which they claim would be the average amount paid by 75 per cent of the travel. This ingenious computation is evidently intended to make it appear that the scrip book holders would pay approximately four one-hundredths of one cent more per mile than those who do not use such books.

While the carriers do not concede the accuracy or the applicability of the deduction process employed by complainants in their efforts to establish the theory that if a scrip book is sold at 2.88 cents per mile, the commercial travelers would pay more than other members of the traveling public, the carriers submit the following table, using 1923 figures, which shows that, after deduct-

ing commutation and surcharge revenue, which would not be affected by the sale of a scrip book, it would be necessary for the remainder of the public, namely 75 per cent, to pay 3.427 cents per mile in order to give the carriers the same revenue that they received prior to the reduction, assuming that 25 per cent of the total travel would use the scrip book and pay 2.88 cents per mile.

Using 1923 figures as a basis: Had a scrip book been on sale during 1923 at a reduction of 20 per cent, the average rate per mile would have been less than 2.84 cents. It therefore follows that if 25 per cent of the travel had paid 2.88 cents per mile during 1923, it would have been necessary to increase the basic rate per mile to something above 3.6 cents in order to give the carriers the same revenue, namely, $1,039,910,441.00, they actually earned in 1923 in the absence of a scrip book.

1923	Passengers one mile	Revenue	Per mile, cents
All traffic	38,005,922,000	$1,147,365,989	3.019
Commutation	6,400,779,000	69,967,039	1.093
	31,605,143,000	1,077,398,950	3.409
Surcharge	.....	37,488,509	.....
	31,605,143,000	1,039,910,441	3.290
	* 7,901,285,750	227,557,030	2.880
	23,703,857,250	$812,353,411	3.427

* 25% of total passengers one mile, excluding commutation.

In making their computations, the complainants also overlooked the fact that when the through fare is based on 3.6 cents per mile, all participating carriers in the traffic do not receive that rate per mile. The through fare between any two given points is made via the short line. All others, on account of their longer mileage, receive proportionately less than 3.6 cents per mile. For example, only one railroad out of seven between Chicago and St. Paul receives 3.6 cents per mile; all others, more or less circuitous, apply the short line fare via their longer mileage and thus receive less per mile than 3.6 cents. This example extends to practically every two competing points in the United States. On the same principle, if a scrip book is sold at 2.88 cents per mile, only the short line between any two given points would receive 2.88 cents per mile; all others, on account of their longer mileage, would, as explained, receive proportionately less than 2.88 cents per mile.

The average distance traveled in the United States in 1923 was 38.55 miles. While a scrip book sold at 2.88 cents per mile would, for the reasons previously stated, yield far less than that amount, for illustrative purposes we apply 2.88 cents per mile to the average distance traveled in the United States to establish $1.11 as the average revenue per trip. At this rate it would be necessary to increase the number of passengers by 57,029,189 in order to yield $63,302,400 in revenue.

Representatives of the commercial organizations have testified that their combined membership is 700,000, while the United States census returns show that the membership of such organizations is less than 200,000, including city salesmen, which we accept as more nearly representing the full strength of these organizations. Still, using 700,000 as a basis, it is not conceivable that this number would extend their trips sufficiently or that a sufficient number of traveling men would be added to present forces to make up the additional scores of millions of passengers necessary to give the estimate of the complainants even a semblance of accuracy.

Assuming that the revenue from one-way passenger traffic for 1923 was $1,000,000,000 and the reduction in that revenue from the sale of a scrip book would have amounted to $60,000,000, leaving the amount actually earned $940,000,000, it follows that it would have been necessary to increase the revenue in the sum of $60,000,000, or 2,142,860,000 passenger miles, at scrip book rate to give the carriers the gross passenger revenue of $1,000,000,000 which they would have earned in the absence of the scrip book.

It is obvious that the carriers of this country cannot accommodate 51,724,138 additional passengers in present-day equipment, and that a large number of additional cars, and possibly additional trains, would be necessary for their accommodation, involving the carriers in an unknown amount of additional expense without any gain in revenue, gross or net. Even if created, this vast additional travel would not distribute itself equally between all trains, but would offer istelf just as other travel comes to the carriers, heavy in volume one day and light the next.

Passenger travel cannot be averaged—that is, it cannot be equally spread during the 365 days of the year between the thousands of trains operated during that period. Travel fluctuates according to season and the influence of economic conditions. Carriers must provide facilities for peak travel and cannot withdraw trains at intervals within seasons when travel is temporarily light, nor, as in the case of California and Florida winter tourist travel, which for perhaps the major part of the time is heavy one way and light the other. This travel is heavy outbound in the early winter months and light in the opposite direction. In the spring the tide is the other way but the consist of trains cannot be changed or reduced during the season they are in operation. Neither is it possible to reduce the size of trains by cutting out cars at intermediate points. The travel between intermediate points, as well as through travel, must be accommodated. To make this clear, the following illustration is given:

The through travel between points A and F may not warrant a five-car train, but the intermediate travel, coupled with the through travel, demands a train of that consist. As stated, in such a case the through travel between A and F may be comparatively light, but the travel between A and C is heavy, requiring the full capacity of the five cars. The local travel between C and D may be light, but the travel between D and F is heavy—again requiring the full capacity of the five cars.

While this operation reduces the passengers one mile, and hence the average occupancy per car, it cannot be abandoned, for two reasons: First, the requirements of the intermediate travel as outlined; and, second, there would be little or no advantage in cutting out a car at a comparatively small intermediate point which is not a division point. To do so would delay two trains —one in cutting out the car and the other in picking it up.

Should a scrip book of $90 denomination (2,500 miles) be ordered on sale at a 20 per cent reduction, or $72, it would mean that while 3.6 cents per mile has been decreed as a just and reasonable rate for the public generally the maximum rate to be paid by passengers traveling 2,500 miles or more annually would be 2.88 cents per mile, and also that $72 would be the maximum amount the carriers would receive from any passenger traveling 2,000 miles or more, but not exceeding 2,500 miles, even though any distance between 2,000 miles and 2,500 miles were made in one single trip. If this condition were created, all normal one-way fares ranging from $72 to $90, now quoted in tariffs throughout the country, would be reduced to $72 by merely issuing one form of ticket instead of another. This would practically mean that no tickets would be sold at regular one-way fares; only scrip books at the reduction would be sold within that range.

It will thus be seen that a casual traveler, a passenger making one long trip in a lifetime, would benefit from the sale of a scrip book. For example: A passenger making a trip between two points where the one-way fare is $85 would buy a scrip book at $72 (face value $90) thereby saving $13 on his one-way fare, even if he threw away the extra $5 worth of transportation and did not use it at all. However, this $5 worth of transportation would be available for use at any time within one year from date of purchase.

The loss to the carriers would arise not alone from the use of scrip books by commercial travelers and by other members of the public, who have occasion to make journeys in pursuance of their business or for pleasure, but a very substantial loss would arise from the fact that all one-way fares between $72 and $90 would at once be reduced to $72, and that all one-way fares above $90 would also be subject to a reduction of $18 through the purchase of one scrip book at $72 (face value $90) and would further be subject to a uniform reduction of 20 per cent by the purchase of two scrip books.

Representatives of the commercial travelers' organizations testified in support of their contention that a reduced rate mileage book would result in increased travel by traveling salesmen and others. One of these, in the wholesale millinery business, testified that houses that now keep their salesmen out for 37 weeks in a year would add two weeks to each season, or four weeks a year. Henry Wolf Bikle, representing the railroads, pointed out that the railroads would hardly profit by a 12 per cent increase in business at a 20 per cent reduction in rate.

Dr. David Friday testified as a witness for the railroads on the basis of studies of the proportion of selling and transportation expense to total sales in the wholesale grocery and drug businesses, saying that a 20 per cent reduction in railroad fares would reduce the cost to the industry of keeping salesmen on the road by only one-tenth of that amount, or 2 per cent, and that it would represent only a fraction of one per cent of the sales. He also pointed out that there have been enormous changes up and down in sales in recent years without any change in passenger fares and that the output of goods depends on many and more subtle influences of various kinds other than a change in the cost of transportation, which is so small a part of the selling costs as to have no material effect on either output or consumption. Dr. Friday said that while more intensive selling efforts may affect the direction of consumption they have little effect on the total volume of consumption. Conceivably railroad fares might be so high as to affect business, he said, but no change of, say, 25 per cent would have any material effect.

Control of E. P. & S. W. by S. P. Authorized

Acquisition Declared to be in Public Interest—Conditioned on Construction Work in Arizona

WASHINGTON, D. C.

ANOTHER STEP toward the carrying out of the Interstate Commerce Commission's consolidation plan was taken on September 30 when the commission issued an order authorizing the acquisition by the Southern Pacific of control of the carriers comprising the El Paso & Southwestern system by stock ownership through the purchase of the interest of the El Paso & Southwestern Company therein and by lease. The commission also issued a certificate authorizing the Arizona Eastern to build an extension of its existing lines from a connection with the Southern Pacific at or near Picacho to Chandler, Ariz., 50.5 miles, a branch from this line to Florence, 7 miles, and a line from Hassayampa to Dome, 115 miles, to be operated by the Southern Pacific. The authorization of the acquisition of control was made conditional upon the completion of the construction of the lines by December 31, 1926, and the certificate requires that construction work shall be begun by January 1, 1925. The request of the Arizona Eastern to retain any excess earnings within the meaning of section 15a of the commerce act for ten years was denied. The commission's report was by Division 4 of the commission, consisting of Commissioners Meyer, Eastman and Potter, but Commissioner Eastman dissented on the ground that what is proposed amounts to a consolidation of the carriers which may be authorized only after the commission has adopted a general consolidation plan.

Authority was also granted for the issuance by the Southern Pacific of $28,000,000 of common stock and $29,400,000 of 5 per cent 20-year collateral trust bonds in payment for the interest of the El Paso & Southwestern Company.

The commission acted upon this case with great promptness as the hearing was held on September 8 and 9.

There was practically no opposition to the application. The city of El Paso and the El Paso Freight Bureau filed an intervening petition protesting, which was subsequently withdrawn. The attorney general of Texas filed a protest and certain representations with respect to the Texas companies embraced in the Southwestern system and requested that any order entered be so conditioned as not to violate the provisions of the constitution and statutes of that state.

Protests were also filed by certain individuals. None of the protestants was represented at the hearing, but intervening petitions in support of the applications were filed and appearances entered on behalf of the Arizona Corporation Commission, the State Corporation Commission of New Mexico, and a number of cities, towns, and commercial organizations of communities served by the applicants and representations in favor of granting the authority sought were made on behalf of the governor of Arizona.

The E. P. & S. W. System

The Southwestern System embraces the El Paso & Southwestern, the El Paso & Southwestern of Texas, the Burro Mountain, the Arizona & New Mexico, the Dawson, the El Paso & Northeastern Railway Company, the El Paso & Rock Island, the Alamogordo & Sacramento Mountain, the El Paso & Northeastern Railroad Company and the Tucson, Phoenix & Tidewater. All of the issued and outstanding capital stock and a portion of the outstanding bonds of the companies embraced in the system are owned directly or indirectly by the Southwestern company. Of the railroad companies of the system only the Southwestern is engaged in transportation of passengers and property in interstate commerce. This company in addition to operating its own lines, operates under lease all the existing railways of the other companies of the system.

The Tucson, Phoenix & Tidewater neither owns nor operates any line of railroad. Its property consists of certain real estate, franchises, and rights of way in Phoenix, Ariz., and elsewhere. By order entered December 26, 1923, the commission had authorized the Southwestern Company to acquire direct control of certain of its subsidiaries, at that time controlled indirectly, and authorized the Southwestern to acquire control of certain of the subsidiaries by purchase of stock and by lease and to issue securities in connection with such acquisition, in payment for certain equipment, and for the purpose of refunding obligations of other companies of the system.

The Southern Pacific proposes to acquire control of the Southwestern system (a) by stock ownership through purchase of the interest of the Southwestern company therein pursuant to an agreement dated June 20, 1924, between the Southern Pacific and the E. P. & S. W., and (b) by lease from the E. P. & S. W. of the lines of railroad owned by it and by assignment from the E. P. & S. W. to the Southern Pacific of the leases whereby the E. P. & S. W. now operates the existing railways of the E. P. & S. W. System not owned by it, including in the assignment any and all trackage and operating rights of the E. P. & S. W. over other lines. The provisions of the lease from the E. P. & S. W. to the Southern Pacific will be substantially the same as those of the leases approved and authorized by the commission in *Control and Securities of E. P. & S. W. Subsidiaries.* Under the agreement dated June 20, 1924, the Southern Pacific will also acquire control of the Nacozari Railroad Company. This company is now controlled through stock ownership by the El Paso & Southwestern company, and owns and controls by stock ownership a railroad beginning at Agua Prieta, and extending thence southwesterly to Nacozari, together with certain lands and franchises in Guaymas, all in Mexico.

Plan of Financing

In payment for the interest of the Southwestern company in the Southwestern system and in the Nacozari the Southern Pacific proposes to issue at par $28,000,000 of common capital stock consisting of 280,000 shares of the par value of $100 each, and $29,400,000, principal amount, of collateral-trust bonds. The bonds are to be dated May 1, 1924, to mature May 1, 1944, to bear interest at the rate of 5 per cent per annum, payable semi-annually on May 1 and November 1 in each year, to be redeemable on any semi-annual interest date at par and accrued interest on 90 days' notice. The common stock and collateral trust bonds are to be issued directly to the Southwestern company in payment for its interest in the properties to be acquired.

The book value of the railway properties and other assets of the Southwestern system companies as of April 30, 1924, was $71,086,202, and bonds of certain of the companies outstanding in the hands of the public amounted to $9,098,000, making the net book value of the Southwestern company's interest in the properties, $61,988,202. The obligation to continue royalty payments to provide a sinking fund for retiring certain of the bonds is guaranteed by the Southwestern company. The value of these royalty payments, said to be approximately $1,000,000, will reduce by that amount the funded indebtedness of the Southwestern system

companies and increase the book value of the properties to be acquired to approximately $62,988,000. Upon the facts of record, the commission's report says, the consideration to be paid for the properties appears to be reasonable. Its tentative valuation of the properties has not been completed.

Relation to Consolidation Plan

The lines of the Southwestern system are intermediate between the lines of the Southern Pacific, and the lines of the Chicago, Rock Island & Pacific system, hereinafter called the Rock Island. The lines of the three systems constitute one of the principal direct routes between southern California and the Missouri River and Chicago, and are included in the Southern Pacific-Rock Island system in the grouping of railroads under the commission's tentative plan for consolidation of railroad properties.

"Acquisition of control of the Southwestern system by the Southern Pacific is in harmony with this plan," the report says. "It will result in direct physical connection between the lines of the Southern Pacific and the Rock Island, will assure the continuance of this route, and will increase its competitive strength as compared with the routes of the Santa Fe and Union Pacific. While the lines of the Southern Pacific and Southwestern system west of El Paso may be said to be parallel they serve different communities and industrial sections. The points at which the two systems meet are important points of interchange of a large traffic to and from communities served by one but not the other. Better co-ordination and more efficient and economical operation will follow as to this traffic and as to transcontinental traffic in connection with the Rock Island, and relations to the traveling and shipping public and to public authorities will be simplified and improved." The report continues:

The Southern Pacific has long had in contemplation double tracking its line between Tucson and El Paso, the necessity for which appears to be now imminent. By acquiring the lines of the Southwestern system, the Southern Pacific will secure substantially all the advantages of double track operation on a more favorable location than would result from double tracking its existing line. This would be accomplished without any capital outlay for new construction. Moreover, the control sought will result in operating economies and make possible the unification of standards and practices. One of the principal economies to be effected by the proposed acquisition of control will be in the reduction of unbalanced traffic. In 1923 the excess of eastbound traffic over westbound on the Southern Pacific between Tucson and El Paso amounted to 90,362,000 gross ton-miles. During the same year on the Southwestern between the same points there was an excess of westbound traffic over eastbound of 70,335,000 gross ton-miles, making the unbalanced traffic under separate operation 160,697,000 gross ton-miles. Under merged operation, without any increase in train service, the unbalanced traffic would have amounted to only 20,027,000 gross ton-miles. The annual saving to be accomplished through better balancing of traffic is estimated at $662,000. The annual saving in administration and operating expenses under unified operations is estimated at $1,487,860, and in capital and maintenance charges through avoidance of double tracking between Tucson and El Paso at $1,954,100, making a total estimated annual saving of $3,430,950.

It is shown that the traffic on the existing main line of the Southern Pacific between Tucson and Yuma is so great that it will soon be impossible to handle it all on a single track. The proposed lines of the Arizona in connection with its existing lines would permit the diversion of part of this traffic over a new low grade route, would obviate the necessity of double tracking the existing route, would provide a shorter and more economical route for traffic to and from Phoenix, the Salt River Valley, the Ray-Hayden mining district, and other points on the Phoenix division of the Arizona, and open new territory susceptible of agricultural and mining development. Construction of the proposed lines and control of the Southwestern system will give the Southern Pacific a second track or line from El Paso to Yuma, except between Picacho and Tucson, a distance of 40 miles, and between Dome and Wendon, a distance of about 15 miles.

It is estimated that the reduction of curvature and grades on the new route, the lessening of interference with train movement, the reduced train and car mileage on traffic to and from points on the Phoenix division, the avoidance of double tracking, and other advantages would result in an annual saving of $902,630. The saving thus to be effected is equivalent to a return of 6.4 per cent per annum on the cost of constructing the new lines and improving the existing line, which is estimated at $14,138,000. The net saving resulting from constructing the proposed lines rather than double tracking the existing main line of the Southern Pacific between Dome and Picacho is estimated at $125,040 per annum.

The proposed lines are to be constructed by the Arizona, but operated by the Southern Pacific under the proposed lease submitted to us in the matter of the application of the Southern Pacific Company to acquire control of the Arizona Eastern and the Phoenix & Eastern by lease, now pending. The Southern Pacific owns practically all the capital stock of the Arizona. The estimated cost of constructing the proposed lines is $12,752,060. The necessary funds for construction will be advanced by the Southern Pacific, which is to be reimbursed by sale of first and refunding mortgage 5 per cent gold bonds of the Arizona, authority to issue which will be asked later. The Arizona proposes to begin construction of the proposed lines as soon as the certificate sought is obtained and to complete them with all reasonable dispatch. Our order authorizing the proposed acquisition of control of the Southwestern system by the Southern Pacific will be conditioned upon the construction of the proposed lines within the time fixed in our certificate.

Commissioner Eastman Dissents

Commissioner Eastman in a dissenting opinion says:

"Under paragraph (2) of section 5 of the interstate commerce act we may authorize one carrier to acquire control of another in any manner not involving consolidation of such carriers into a single system for ownership and operation. Under paragraph (6) of the same section we may authorize such consolidations, but only after we have adopted a general consolidation plan under the provisions of paragraph (5). We are here asked to authorize an acquisition of control under paragraph (2). In my opinion, what is proposed is not such an acquisition of control as is contemplated by that paragraph, but is a consolidation of the carriers in question into a single system for ownership and operation. The Southern Pacific is to own 100 per cent of the shares of stock evidencing ownership of the El Paso & Southwestern system. In addition it is to become the lessee of the various parts of that system so that their operations may be intermingled with its own for purposes of management and accounting. Thereafter the two systems will, to all intents and purposes, be fused. It will in no way be easier to pry them apart than if there were a technical consolidation of the corporate entities. If this is not a consolidation of the carriers into a single system for ownership and operation within the meaning of paragraph (2), then the distinction which that paragraph attempts to make is utterly inconsequential. In my opinion, it was not the intent of Congress that we should permit the fusing of railroads in this irretrievable fashion prior to the adoption of our consolidation plan, and the action of the majority in this case is contrary to both the spirit and the letter of the law."

Pullman Rate Hearing

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION'S hearing on Pullman rates and the surcharge was resumed at Washington on September 27 before Commissioner Campbell and Examiner Keeler, following an earlier hearing at St. Paul. Much of the time was taken up with the presentation of the results of an elaborate check of the accounts of the Pullman Company by accounting examiners and engineers of the commission. At the opening J. H. Parmelee, director of the Bureau of Railway Economics, and L. E. Wettling, manager of the Western lines' statistical bureau, presented statistical evidence which the railroads were asked to furnish at the previous hearing and C. M. Burt, chairman passenger department, Trunk Line Association, and B. M. Bukey, assistant general passenger agent of the Atchison, Topeka & Santa Fe, gave statements regarding the effect of automobiles on passenger traffic. Both said that while the automobile has become an important factor in both local and long distance passenger transporta-

tion it is impossible to show the extent of the effect because people owning an automobile make so many trips that would not have been made by railroad. Bukey said it is not correct to refer to all this automobile travel as competition with the railroads and while he said that 60 to 80 per cent of the travel to the national parks is now by automobile it is impossible to estimate how much of this travel represents business taken from the railroads. At the close of the testimony on behalf of the railroads, Henry Wolf Bikle, general attorney of the Pennsylvania, said that the position of the carriers is that the present method of collecting the surcharge is the best but that if it should be decided that some other method should be used there are many details that should be worked out in conference.

A. F. Brevillier, of the commission's Bureau of Accounts presented his analysis of the Pullman accounts to which the bureau has taken exceptions not assented to by the Pullman Company, although it had agreed with some of the criticisms made and had corrected certain errors. The disputed points include the 10 per cent manufacturing profit on Pullman cars built in its own plant to represent a return on its investment in the passenger car plant, which has recently been organized as a separate company the stock of which is owned by the Pullman Company. There was also a dispute on the accounting for cars retired and another on the accounting for major renewals. G. S. Fernald, General Counsel of the Pullman Company, filed a formal objection to the omission of a return in the property used in the manufacture of Pullman cars, saying that the company can make these cars for less than they could be built for by any other company and that unless the rates are excessive the commission has no power to reduce the cost of the cars unless it should find the cost excessive. If the charges are not more than they would have been had the property been constructed by others, he said, the public cannot be adversely affected by the inclusion of an amount to represent a return on the investment. He also objected to any evidence in respect of cars built before the commission had jurisdiction over sleeping car companies and before it prescribed a system of accounts. A ruling on the objection was reserved for conference by the commission. The witness insisted that cars retired should be written out of the investment account as of the date of their last service, whereas Mr. Fernald said it had long been the practice of the company to hold such cars in storage for a time as a reserve for unusual demands for cars and to "clean up" the accounts each year. He said that if there had not been such a reserve when the United States entered the war there would have been a great shortage of cars for troop transportation. The effect of the witness' contention would be to reduce the property investment account. His analysis also reduced by approximately $14,000,000 the amount charged to maintenance of cars in the case of heavy renewals which he said should be charged to capital account. This was done by the application of the major renewals rule of the classification of steam road accounts, which applies to cars rebuilt to the extent of 50 per cent, to the Pullman accounts by a special formula devised by one of the commission's engineers. Mr. Fernald asked for a ruling by the commission as to whether this application of the rule to the Pullman Company had ever been approved by the commission itself or whether it had only the standing of an instruction of the Bureau of Accounts. Commissioner Campbell also reserved a ruling on this point. On cross-examination Mr. Fernald had the witness apply the formula to a car on which $16,000 was spent for new materials and labor and the result was a valuation of the rebuilt car less than the cost of the new materials and labor. K. L. Hyder (American Appraisal Company) told of an appraisal of the passenger car plant of the Pullman Company used in the manufacture of its own cars, which showed a cost of reproduction new of $25,332,589 and a cost of reproduction less depreciation, which he called "sound value" of $17,851,521.

Freight Car Loading

WASHINGTON, D. C.

FREIGHT CAR LOADING again increased during the week ended September 20 to a total of 1,076,553 cars, which was 15,742 cars more than were loaded during the corresponding week of last year. This was also within 21,000 cars of the peak of last year, which was attained during the last week of September. As compared with 1922 the increase was 115,415 cars. With the exception of coal, coke and ore the loading this year has been 144,222 cars in excess of the loading of the corresponding period of 1923 of the same commodities. Miscellaneous loading, 397,877, cars, and merchandise loading, 257,469 cars, were the highest on record, while coal loading was the highest this year since February 16. Loading of grain and grain products, 68,563 cars, was the second highest on record for any week. The loading of grain and grain products, coal, merchandise, and miscellaneous showed increases as compared with last year, as did the totals in all districts except the Allegheny and Northwestern. All classes of commodities except ore showed increases as compared with 1922. The summary as compiled by the Car Service Division follows:

Week Ended September 20, 1924

Districts	1924	1923	1922
Eastern	247,339	239,472	240,032
Allegheny	215,553	220,514	208,394
Pocahontas	48,999	43,457	26,807
Southern	148,733	141,659	120,766
Northwestern	164,533	180,117	150,313
Central Western	175,547	164,824	155,180
Southwestern	75,849	70,768	59,646
Total Western	415,929	415,709	365,139
Commodities—			
Grain and grain products	68,563	48,895	51,753
Livestock	38,572	41,159	36,824
Coal	188,985	182,591	187,204
Coke	8,943	13,339	8,651
Forest products	67,777	73,646	58,281
Ore	48,367	75,530	50,445
Mdse., l. c. l.	257,469	250,481	233,639
Miscellaneous	397,877	375,170	334,341
Total	1,076,553	1,060,811	961,138
September 13	1,061,424	1,060,563	937,221
September 6	920,979	928,916	823,247
August 30	1,020,339	1,092,150	923,806
August 23	982,248	1,069,915	879,902
Cumulative total, January 1 to date	34,615,567	36,205,746	30,329,307

The freight car surplus during the period September 8-14 showed a further reduction to 167,157 cars, including 84,197 coal cars and 57,828 box cars. The Canadian roads had a surplus of 21,170 cars, including 18,250 box cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended September 20 amounted to 63,052 cars, an increase of 7,538 cars over the previous week. Grain shipments were heavier by 4,700 cars, of which 731 were in the Eastern division and 3,969 cars in the Western division. The Eastern division showed a gain also of 1,140 cars in miscellaneous freight and of 669 cars in coal, but little change in other commodities. In the Western division gains were made in miscellaneous freight of 348 cars, in merchandise of 134 cars and in coal of 270 cars, in addition to the increase in grain. Compared with the same week in 1923 the car loadings were lighter by 5,642 cars.

Total for Canada

Commodity	For the week ended 1924 Cars Sept. 6	Cars Sept. 13	Cars Sept. 20
Grain and grain products	4,159	6,490	11,190
Live stock	2,149	2,589	2,776
Coal	5,163	6,061	7,000
Coke	237	256	204
Lumber	3,185	3,650	3,589
Pulpwood	1,566	1,522	1,557
Pulp and paper	1,777	2,019	1,960
Other forest products	1,950	1,974	2,197
Ore	1,424	1,547	1,260
Merchandise L.C.L.	14,106	15,624	16,049
Miscellaneous	11,868	13,782	15,270
Total cars loaded	47,593	55,514	63,052
Total cars received from connections	25,337	27,498	31,164
Total cars loaded for corresponding week, 1923	51,550	61,746	68,694
Cumulative loading to date—1924			2,019,142
1923			1,933,817

Report on Cranford Derailment

THE INTERSTATE COMMERCE COMMISSION has issued a report, dated September 19 and signed by W. P. Borland, director of the Bureau of Safety, on the derailment of east-bound passenger train No. 604 of the Central of New Jersey at Lincoln avenue, Cranford, N. J., on August 21, when four persons were killed—one passenger, two employees and the driver of the automobile truck. This derailment was reported briefly in the *Railway Age* of August 23, page 344.

The railroad line at Cranford consists of six tracks. Lincoln avenue crosses the tracks at an angle of 42 deg., from northwest to southeast. From north to south the tracks are numbered 6, 4, 2, 1, 3 and 5. The accident occurred on track 1, which is the east-bound passenger track. The tracks are tangent for a considerable distance in each direction. Following is the substance of the report:

Approaching the railroad from the south on Lincoln avenue, the view of the tracks to the west is nearly obscured until a vehicle reaches a point 40 ft. south of the south rail of track 1, or just before reaching the outside rail of track 5. The grade from the south on the highway is level until a point 12 ft. from the outside rail of the tracks is reached, then it ascends to track 3, being level across track 1. A crossing sign is located on the east side of the highway about 11 ft. south of the tracks, reading "RAILROAD CROSSING. LOOK OUT FOR THE LOCOMOTIVE." There is also an automatic crossing bell in a partially screened enclosure on top of the mast supporting the crossing sign. There is a similar sign with a bell at the north approach of the crossing. These bells ring when a train approaches the crossing, the control circuit operated by eastbound trains beginning at a point 3,502 ft. west of the crossing. The hammer strikes the bell at the rate of 90 strokes to the minute. The bell at the southern approach can be heard faintly in an automobile with the engine running in low speed at a point 75 ft. from the outside rail and about 65 ft. from the bell. The weather was clear at the time of the accident, which occurred at about 9:29 a. m.

The train, operated jointly by the Central of New Jersey and the Reading Company, consisted of one combination car, two coaches, and one Pullman parlor car, of all-steel construction, hauled by engine 346, and was in charge of Conductor Wolfinger and Engineman Gilbert. It struck the automobile while traveling at 55 to 60 miles an hour (estimated).

The automobile was proceeding northward on Lincoln avenue. It crossed tracks 5 and 3, and proceeded upon track 1 directly in front of the approaching train at a good rate of speed, and had almost got across when its rear end was struck by train No. 604. The remains of the truck chassis came to rest across tracks 4 and 6, upright, 87 ft. east of the crossing. Engine 346 came to rest on its left side, its forward end being 707 ft. east of the crossing. . . . All of the cars were derailed except the rear truck of the rear car. . . . The employee on duty killed was the fireman.

Engineman Gilbert stated that the speed of the train was about 55 miles an hour, and that the automatic engine bell, operated by air, was ringing. He sounded the engine whistle for the crossing, and just after finishing this signal, when a short distance west of the crossing, the truck suddenly appeared from the south. . . . He applied the air brakes in emergency just about the time the engine struck the truck. Engineman Gilbert further stated that he had seen several narrow escapes from collisions between automobiles and trains at this particular crossing. . . .

A number of witnesses testified to the effect that the highway crossing bell was ringing and that the engine whistle was sounded properly as the train approached Lincoln avenue. Efforts were made by a mail carrier and by a nearby resident to attract the attention of the driver of the truck in time to avert the accident, but to no avail. He was seen to look to the right and then to the left, at which time he apparently saw the train for the first time, too late to stop the truck.

The automobile involved in this accident was a five-ton Mack truck, having a light weight of 14,400 lb. and a loaded weight of 24,400 lb.; owned and operated by the Newark Paving Company, and was being driven by Harry Thompson. He was 26 years of age and had been in the employ of the paving company for about 2½ years; he was said to have had a good record both as an employee and as a driver.

About 188 train movements are made over this crossing per day, while there is much switching in the vicinity, causing the fixed crossing bells to ring a great deal. With the exception of the highway crossing bells and sign posts, no protection is afforded vehicular traffic at this crossing. There is, however, a foot bridge for the use of pedestrians.

Conclusions

This accident was caused by the driver of an automobile truck proceeding upon a railroad crossing at grade directly in front of an approaching passenger train.

The investigation indicates that the proper warning signals were sounded by the engineman, and that the highway crossing bells were ringing and that efforts were made by persons to attract the attention of the driver of the truck, but that he did not use the precaution necessary before proceeding over the railroad crossing at a point where the view of approaching eastbound trains is nearly obscured. There was no other train in the immediate vicinity of the crossing at the time of the accident. Had the driver of the truck approached the crossing under proper control and definitely ascertained that the way was clear before proceeding across the tracks, this accident would not have occurred.

This crossing is not protected by a flagman or gates, while the highway crossing bells can not be heard distinctly for any material distance. In view of the large number of train movements and the switching operations in this vicinity, as well as the fact that this is a six-track crossing, the distance over the crossing along the center of the roadway from the outside rails of the tracks being 95.4 ft., it is believed that the crossing may well be considered as dangerous, and that some form of protection for vehicular highway traffic in addition to the crossing signs and bells, is necessary. . . .

Suit for Damages

The *Railway Ave* is advised that the railroad company has entered suit in the Supreme Court of New Jersey against the Newark Paving Company, asking $75,000 on account of damages resulting from the careless act of the driver of the truck. The complaint sets forth that complainant "sustained severe damage to its train, cars, locomotive, tender, signaling equipment and devices, tracks and roadbed" and that because of the crash its "trains were stopped, interrupted and greatly delayed and its train schedules and train services were disrupted and greatly interfered with, thereby depriving the plaintiff of great revenue which it would otherwise have received."

It is alleged that the accident was caused by "negligence and carelessness of the company's driver"; that he failed to observe the approach of the train, did not heed the warning of bell and whistle, failed to stop, look and listen; drove at a "negligent, careless and excessive" rate of speed and did not have his vehicle or its brakes under control or in proper condition.

THE GRAND TRUNK WESTERN (Canadian National) now runs a sleeping car from Chicago to Saginaw, Mich., and Bay City, leaving Chicago daily at 11:15 p. m.

General News Department

The week beginning October 5 having been designated as National Fire Prevention Week, the Railway Fire Prevention Association is urging all railroad men to renew their efforts at this time to further reduce their losses through fire.

W. N. Doak, vice-president and national legislative representative of the Brotherhood of Railroad Trainmen, has announced his intention to seek the Republican nomination for United States senator from Virginia to oppose the present Democratic incumbent, Senator Carter Glass.

The general offices of the Pennsylvania in Chicago will be moved to the new Union Station building on October 11. The offices are now located both in the Pennsylvania's own building and in the Insurance Exchange. In their new location, all departments will be together.

Fines aggregating $22,000 were imposed on the Pennsylvania Railroad by Judge Rellstab in the Federal Court at Trenton, N. J., on October 1, following the company's pleas of guilty of violating the twenty-eight hour live stock law in 222 instances. The charges were filed by the United States Department of Agriculture and embraced violations covering a period of about two years.

A "Country Fair" is being held by the Railroad Y. M. C. A. at Pennsylvania Station, New York City. The Long Island Railroad, a part of the Pennsylvania system, has a large demonstration farm at Medford, Long Island, and products from this farm, in the custody of H. B. Fullerton, director of agricultural development, form a chief feature of the fair. Merchants occupying Pennsylvania station are leading supporters.

The Traffic Instruction Class of the Railroad Y. M. C. A., St. Louis, Mo., has begun its sessions for 1924-25 with an enrollment of sixty—all that can be accommodated—and a waiting list which may necessitate the formation of a second class. The instructor is J. K. Wells, and sessions are held on Monday and Thursday evenings from 6:15 to 8 o'clock. This instruction on practical traffic questions is supervised by a strong committee of railroad traffic officers of which W. C. Stith, traffic manager of the Terminal Railroad Association, is chairman.

Rensselaer Polytechnic Institute, Troy, N. Y., the oldest school of science and engineering in any English-speaking country, and classed also as the first college of agriculture, is this week celebrating the hundredth anniversary of its foundation. The two-day program calls for addresses by Hon. Herbert Hoover, the presidents of several colleges, and the presidents of the principal engineering associations. The list of names of noted graduates of the institute include A. W. W. Evans, J. F. Barnam, William Clement, Alfred Walker, Theodore Voorhees, Strickland Kneass, George B. Roberts and A. J. Cassatt.

M. B. A. Eleven Years Old

The Mutual Beneficial Association of Pennsylvania Railroad Employees (headquarters, 1841 Filbert street, Philadelphia) held its eleventh general assembly at Philadelphia on September 22, 23, and 24 with 68 delegates present. This assembly marked the association's eleventh year. Vice-Presidents Atterbury and Peck made addresses at the opening session. The yearly statement shows a sound financial condition, with total assets of $486,159. Membership is increasing steadily and the general situation of the association is a source of much gratification to the members.

The Mutual Beneficial Association runs a co-operative store at Altoona, Pa., which, from a small beginning in 1921, now does a business averaging above $90,000 a year.

L. F. Loree Knighted by King of Italy

Leonor F. Loree, president of the Delaware & Hudson and chairman of the board of directors of the Kansas City Southern, has had conferred upon him by the King of Italy the Order of the Crown of Italy, with the rank of Cavaliere; this in recognition of Mr. Loree's long continued valuable services in the engineering profession and to the science and the business of railroading; with special reference to Mr. Loree's well known treatise on "Railroad Freight Transportation."

Executives Study Unemployment

The committee appointed by the executive committee of the Association of Railway Executives to make a thorough study of the question of stabilizing railway employment held a meeting at Washington on September 30 and elected Daniel Willard, president of the Baltimore & Ohio, as chairman. The committee held a three-hour conference with seven members of the Interstate Commerce Commission, who expressed interest in the plan, and both the commission and the committee are to proceed actively with a study of the many phases of the problem.

Centennial of the Baltimore & Ohio

The commission appointed by the governor of Maryland, in pursuance of the recent act of the Legislature looking toward the celebration of the hundredth anniversary of the granting of the charter of the Baltimore & Ohio Railroad Company, consists of George Weems Williams, John W. Garrett, Jacob Epstein, Alexander Brown, Van Lear Black, Holmes D. Baker, and Oliver H. Bruce, Jr. Mr. Baker is a banker of Frederick and Mr. Bruce is an attorney at Cumberland; the rest are business men of Baltimore. Messrs. Garrett and Brown are descendants of founders of the railroad company.

International Railway Congress at London

The next congress of the International Railway Congress Association will be held in London from June 22 to July 6, 1925. Besides the regular business, the congress will make a number of excursions to places of railway interest in Great Britain—among them the Swindon works of the Great Western Railway, Darlington (where the centennial of British railways will be celebrated), Windsor, Canterbury, Edinborough, Glasgow and the great Clyde industrial district. The chairman of the arrangements committee is Sir Evelyn Cecil, G. B. E., director of the Southern Railway, 2, Cadogan Square, London, S. W. 1.

National Safety Congress Meets at Louisville

The National Safety Congress, comprising those representatives of steam and electric railroads and of other industries and associations who are engaged directly or indirectly in the promotion of the health and safety of the public and of employees, held its thirteenth annual congress at Louisville, Ky., on September 29 to October 3, inclusive, at which time an extensive program of addresses, reports and exhibits on safety work was made available to those present.

Over 100 were present at the first session of the Steam Railroad Section which was held in the Seelbach Hotel on Tuesday morning, where Henry Bruere, a member of the board of directors of the Chicago, Rock Island & Pacific, and winner of the recent *Railway Age* contest on co-operation between railways and their employees, delivered an address on better management through co-operation, which was followed by a paper on the development of safety on the railroads by Charles Frederick Carter, author of "When Railroads Were New." Other sessions of the Section were held on Wednesday and Thursday morning, when papers were presented and discussions held on special railroad safety

problems and work. These discussions were devoted in large part to getting the viewpoint of officers engaged directly in the work of the departments considered.

The officers of this Section are as follows: Chairman, Fred M. Metcalfe, superintendent of safety, Northern Pacific; vice-chairman, Charles E. Hill, general safety agent, New York Central; and secretary, E. R. Cott of the Hocking Valley. The election of officers for the ensuing year resulted in the choice of Charles E. Hill for chairman, and for vice-chairman and secretary, A. V. Rohweder of the Duluth, Missabe & Northern, and E. G. Newman of the Union Pacific, respectively.

Car Inspectors and Car Foremen Elect Officers

At the twenty-third annual convention of the Chief Interchange Car Inspectors' and Car Foremen's Association held at Chicago, September 23, 24 and 25, the following officers were elected for the year 1924-25: President, C. M. Hitch, district master car builder, Baltimore & Ohio, Cincinnati, Ohio; first vice-president, W. P. Elliott, general foreman, Terminal Railroad Association of St. Louis, East St. Louis, Ill.; second vice-president, B. F. Jamison, special traveling auditor, Southern Railway, Meridian, Miss.; third vice-president, E. R. Campbell, general car foreman, Minneapolis Transfer Railroad, Minneapolis, Minn., A. S. Sternberg, master car builder, Belt Railway of Chicago was re-elected secretary-treasurer. The following new members of the executive committee were elected: C. J. Hayes, traveling American Railway Association supervisor, New York Central, Yonkers, N. Y.; W. M. Pyle, accountant, Southern Pacific, Tucson, Ariz.; Livingston Martin, chief car repairer, Baltimore & Ohio, Baltimore, Md.; and T. S. Cheadle, chief car inspector, Richmond, Fredericksburg & Potomac, Richmond, Va.

Hearings on Canadian Telegraphers' Wages

The first sitting of the arbitration board named by the Canadian Minister of Labor at Ottawa, James Murdock, to hear the dispute between the Canadian National and Canadian Pacific Telegraph Companies and their employees was held on October 2 at the King Edward Hotel, Toronto. The men are asking that a universal wage scale be put in effect from coast to coast. This would involve an increase in wages from $5 to $8 per month for the men in Eastern Canada, as Western telegraphers are now paid at a higher rate than those in the East.

R. Home Smith of Toronto is chairman of the board; F. H. Phippen represents the companies; and James Simpson of Toronto is the board's member for Labor. W. G. Barber, general manager of the Canadian National Telegraphs, and J. McMillan, general manager of Canadian Pacific Telegraphs, will direct the presentation of the companies' case, while the men will be represented by Paul Schnur, vice-president of the International Telegraphers' Union, Harry Lynch of Toronto, and others from Western Canada and the Maritime provinces.

Labor Board Asks Court Aid

The anticipated test of the powers of the United States Railroad Labor Board under the Transportation Act was begun in Chicago on September 29 when a petition was filed with the United States District Court by the Labor Board, asking that John McGuire, general chairman of the Brotherhood of Locomotive Engineers on the Chicago & North Western, and O. B. Robertson, president of the Brotherhood of Locomotive Firemen & Enginemen, be compelled to testify before the board, the latter to fix the time and place. The two defendants in the present case, as well as a number of other brotherhood officials, had twice ignored subpoenas of the Labor Board to appear and testify in the controversy with the western railways over proposed changes in wages and working rules.

The petition was filed before Federal Judge James H. Wilkerson by Edwin A. Olson, United States attorney, and Weymouth Kirkland and Robert N. Golding, special assistants to the United States attorney general.

Donald R. Richberg, counsel for the brotherhoods, declared that the statement of facts in the Labor Board's petition was incorrect and that the defendants would therefore not move for dismissal, since such a motion would entail acquiescence in the statement of facts, but would file an answer, setting forth their version of the facts of the dispute. It is expected that the defendants' counsel will first attack the Labor Board's action in intervening in the dispute on the grounds that the assumption of jurisdiction was unlawful. Then an attack on the power of the Labor Board to require testimony and on the constitutionality of the Transportation Act itself are expected. It is also anticipated that the present litigation is the first move in a campaign by the brotherhoods to secure the revision of the existing procedure in handling railroad labor disputes through passage of legislation in Congress similar to the Howell-Barkley railway labor bill, which failed to pass last spring.

N. & W. Baseball Championship

The Norfolk & Western's Norfolk, Va., baseball team won the system championship at Roanoke, Va., on September 13 when it won one game of a double-header with the Roanoke Terminal team. The Norfolk team won 29 victories and suffered but six

The Norfolk Team

defeats during the season. The teams which took part in the semi-finals besides those representing Norfolk and Roanoke Terminal were the Shenandoah and the Columbus, representing four out of the system's seven divisions.

Local Taxation of Government-Owned Property in Canada

As a result of negotiations between the Canadian Government and some of the provincial governments settlements have been reached, especially in the case of Ontario, of claims held by that province against the former Canadian Northern Railway Company for certain taxes, according to an announcement by George P. Graham, Minister of Railways and Canals at Ottawa. Representatives of his department will confer further with the other provinces with a view to a final clean-up of provincial claims.

On another matter, that of the liability for taxes of tenants of government-owned railway properties in various municipalities throughout the dominion, it appears that the municipalities have won out. About five years ago the question was raised in Montreal when that city imposed taxes upon a tenant of government property. On an appeal to the courts it was held that the tenant could be assessed by the city as far as his interest in that property was concerned. The previous Conservative government at Ottawa took the decision to the Privy Council in London, Eng., and that body upheld the judgment of the Canadian court.

There are several towns on government-owned railways, especially in Ontario, where the management of the Canadian National Railways have leased to the employees houses built on the property of the system. Although these have heretofore been held as exempt from taxation it would appear from the court decisions that the municipalities may tax those tenants.

Railroad Owners' Association

Between 4,000 and 5,000 railroad stockholders have been enrolled as members of the Railroad Owners' Association since its organization in June, according to announcement made in connection with a meeting of the organization committee held in New York on September 17. At this meeting J. D. Shatford, who has been in charge of the association's Washington office and who conceived the idea and brought the organization into being, was elected permanent chairman. Captain S. G. Hopkins of Washington was elected secretary. Lionel Sutro and Walter

S. Case, both of New York, were elected members of the enlarged organization committee. Announcement was made that the association will at once be incorporated.

The purpose of the association is to prevent the working of loss and injustice to railroad stockholders from legislation inimical to and destructive of their large investment. It is intended to take part in matters affecting railroad stockholders which come before Congress or the Interstate Commerce Commission.

Preliminary expenses of the organization were borne by individual members of the temporary organization committee and by voluntary contributions received in acknowledgment of circular invitations sent to stockholders of railroads which the committee has been able to interest in the new association. The Railroad Owners' Association is intended to be "distinctly an owners' organization, supported by owners who, as partners in the railroad industry, have a direct and paramount interest in the welfare and defence of their properties."

Further details concerning the plans of the new association were given in an item in the *Railway Age* of September 27, page 563.

The office of the association is at 801 Hibbs Building, Washington, D. C.

Thornton Deprecates LaFollette's Effort to Bring C. N. R. Into U. S. Campaign

Addressing a committee from Chicago in Montreal studying the terminals at a luncheon in the Windsor Hotel, last week, Sir Henry Thornton, president of the Canadian National, took occasion to express deep regret that the Canadian government-owned system had been introduced into the United States presidential campaign. After pointing out that the problem of success on the Canadian National is almost entirely a problem of first increasing the population of the country to a strength sufficient to support the system, Sir Henry declared this did not mean that the same problem faces the railways in the United States and that, therefore, the success or failure of the Canadian National Railways could not be used either as an argument for or against the nationalization of the roads in the United States.

"I feel justified in making this statement," said Sir Henry, "as there seems to be a tendency to draw the Canadian National Railways into United States politics. Mr. LaFollette is holding up the Canadian National Railways as an example of the blessings of government ownership. Others are holding it up as a horrible example of the vices of state ownership. I rather deprecate that situation and I would be obliged if they would let me look after my own troubles and attend to my own business."

Sir Henry thought it well to tell the visitors something of the C. N. R. "It became a state institution not because the people are enamored of public ownership but because an existing situation forced the government of the day to take such a step." He related the particular circumstances of the Grand Trunk Pacific, the Grand Trunk and the Canadian Northern, and added: "The government of the day decided it was wiser to take over the railways than to allow them to fall into a receivership." This led Sir Henry to remark that the whole situation had caused some misunderstanding in the United States, as quoted in the foregoing.

Excursion of Passenger Men to Europe

On eight steamships of prominent trans-Atlantic lines, sixty-six members of the American Association of Passenger Traffic Officers, most of them accompanied by their wives, totalling a company of over 100, sailed from New York on Saturday morning, October 4, for an "official" trip to Europe as guests of the steamship organization, the "North Atlantic Passenger Conference"; and it is planned to spend about ten days traveling in England and on the Continent. Sydney E. Morse, New York City, Secretary of the North Atlantic Steamship Conference, announces that this business excursion is the result of conferences held last spring between steamship men and railroad officers both of Europe and America, looking toward improvement of passenger transportation generally. A committee of steamship men, pursuant to the agreements reached, has been distributing European advertising matter in American railroad stations.

The vessels on which the excursionists sail are the Cameronia of the Anchor Line; the Minnetonka of the Atlantic Transport Line; the Laconia of the Cunard Line; the Albert Ballin of the Hamburg-American Line; the Veendam of the Holland Line; the Orca of the Royal Mail Line and the Cedric and the Olympic of the White Star Line. The members of the association, who were assigned to the different steamships by lot, are:

Anderson, J. P., P. R. R.
Allen, L. M., C. R. I. & P.
Adsit, S. M., Virginian.

Bowman, D. M., C. C. C. & St. L.
Barrows, W. A., B. & A.
Brown, J. S., Ashley and Dustin Strs.
Bandy, A. J., Q. O. & K. C.
Black, W. H., C. D. & G. B. Transit Co.
Billups, J. P., Atlanta & W. P.
Beckler, W. A., Southern.

Calloway, W. B., B. & O.
Condon, J. F., Great Lakes T. C.
Cockroft, L. F., Oceanic SS. Co.
Cutts, A. B., M. & St. L.
Cornatzar, J. N., St. L.-S. F.
Charlton, G. J., C. & A.
Callahan, W. H., N. & W. Stbt. Co.
Cotsworth, A. Jr., C. B. & Q.
Connell, J. M., A. T. & S. F.
Cairns, C. A., C. & N. W.

Daniel, A. D., A. B. & A.

Fisher, W. H., Hocking Valley.
Fenwick, W. M., M. K. & T.

Grant, F. T., B. & M.
Grant, J. Russell, N. Y. C.

Hope, W. C., C. of N. J.
Helbig, O. H., Prescott & N. W.
Huntington, H. E., B. R. & P.
Howe, Carl, Michigan Central.
Hicks, R. C., Georgia & Florida.

Keenan, W. S., G. C. & S. F.
Kenworthy, J. E., Georgia & Florida.
Kennedy, B. J., Michigan Transit Co.

Landman, L. W., N. Y. C.

Melanson, H. H., C. N. R.
McRoberts, T. J., W. & L. E.
MacLean, N. F., White Star Line.
Mordecai, J. B., R. F. & P.
Matthews, F. C., Midland Terminal.
Monroe, J. T., Southern Pacific.
Maxwell, Miss Elinor.
Newman, F. R., M. St. P. & S. Ste. M.

Potts, J. D., C. & O.
Price, D. J., I. & G. N.
Paine, Waldo G., Spokane & E.
Powers, M. J., D. & H.

Ridgely, J. K., L. & N.
Rose, C. E., N. Y. C. & St. L.
Russell, W. A., L. & N.
Rahner, J. D., Florida East Coast.
Robinson, F. J., Central of Georgia.
Robinson, G. L., N. Y., O. & W.

Strain, C. W., Gulf Coast Lines.
Stoddard, R. G., D. & C. Nav. Co.
Sellander, W. H., Matson Nav. Co.
Stone, C. L., Missouri Pacific.

Wallace, R. H., Erie.
Watts, H. E., Wabash.
Wadleigh, F. A., D. & R. G. W.
Woods, C. F., A. & V.
Wolfenden, W. E., Pere Marquette.
Wasley, W. F., Muskoka Lakes Nav. Co.
Welden, A. T., C. N. R.
Williams, E., C. & W. C.
Wescott, G. H., Copper Range.

Young, W. A. Jr., Pac. Mail SS. Co.

The excursionists expect to be in London October 15, Rotterdam October 16, Berlin October 18, Basle October 19, Antwerp October 21, Brussels October 22; Paris October 23 and 24.

Some Pennsylvania Railroad History

Samuel H. Church, assistant secretary of the Pennsylvania Railroad Company, believes that the Pennsylvania, not the Baltimore & Ohio, should be arranging to celebrate the centennial of its origin, as the first railroad in America, as he has discovered that a charter was granted in 1823. He has issued a statement to substantiate his claim. Colonel John Stevens, father of the founder of the Stevens Institute of Technology at Hoboken, N. J., who was a soldier in the war of the Revolution and who was engaged in important railroad enterprises in the early part of the 19th century is declared to be the father of the Pennsylvania Railroad, he having been first to conceive the project. He also very early saw the superiority of the railroad locomotive over the canal boat and secured from the legislature of New Jersey on February 6, 1815, a charter for a railroad from New Brunswick to Trenton—that is to say, on the line now occupied by the Pennsylvania Railroad. But the public mind in 1815-19 was not sufficiently enlightened, and Stevens turned to Pennsylvania, where on March 21, 1823, he received from the legislature a charter, the first ever granted for a railroad company in that state, incorporating the Pennsylvania Railroad Company. It was for a line from Philadelphia westward to Columbia on the Susquehanna river. Stephen Girard was one of the incorporators.

Stevens made surveys of the line and he built a short test railroad at Hoboken, N. J., to test the merits of the steam locomotive.

Various letters are cited to show that actual progress was made in 1823 and 1824; but the politicians favored canals and the railroad project languished. Stevens seems then to have turned his attention to the Camden & Amboy, in New Jersey, and on April 27, 1826, the Pennsylvania legislature incorporated another corporation to be known as the Columbia, Lancaster & Philadelphia Railway; superseding the charter of 1823; but this, says Mr. Church, was a direct continuance of the scheme of Colonel Stevens. On March 24, 1828, the legislature voted $2,000,000 of state money for the construction of the line—the first railroad in the world to be built at the expense of a state. In April, 1828, three months before ground was broken for the Baltimore & Ohio, Major John Wilson began the location of the Pennsylvania at Columbia.

Names appear to have been used very loosely, legislative acts sometimes referring to the Pennsylvania Railroad, while at other times recognizing the local custom of calling the road the Philadelphia & Columbia. It was also called the Columbia & Philadelphia, the popular titles being used now one way and now another. In 1834 transportation from Philadelphia to Pittsburgh was

opened, the state canal being used from Columbia westward and the Portage railroad over the mountains. On April 13, 1846, the legislature passed an act to incorporate the Pennsylvania Railroad Company to build a railroad from a connection "with the Columbia Railroad" to Pittsburgh.

Patching together the foregoing facts and various collateral data Mr. Church concludes:

". . . that money was spent and work begun on the project in 1823, and that the enterprise was kept alive without any break in its chartered powers by the acts of 1826 and 1828; that the latter act restored the name, the Pennsylvania Railroad, which originated in the 1823 charter; and that the railroad extending from Philadelphia to Columbia, was actually built as the Pennsylvania Railroad. The present charter of the Pennsylvania Railroad Company (April 13, 1846) simply preserved in perpetuity the name which John Stevens obtained for the original enterprise . . . The careless nomenclature used in the legislative acts passed after 1832, and the fact that the railroad from Philadelphia to Columbia was owned and operated by the state, made it necessary to re-enact the present title of the railroad in the 1846 charter. . . .

Crow's Nest Pass Hearings Completed

After eight days of argument by counsel and of filing of affidavits and statistical comparisons, the Crow's Nest Pass Agreement rate case was concluded before the Board of Railway Commissioners of Canada on September 26 with the announcement by the newly appointed chairman, Harrison A. McKeown, that a decision would be rendered at the earliest possible moment. There was a full attendance of the board itself throughout the hearing and the following counsel and organizations appeared before it: Eugene Lafleur, of Montreal, for the Railway Association of Canada; W. N. Tilley, of Toronto, and E. P. Flintoft, of Montreal, for the Canadian Pacific; Alistair Fraser, of Montreal, and Frank Watson, for the Canadian National; H. J. Symington, of Winnipeg, for the three prairie provinces; G. G. McGeer, for the province of British Columbia; Isaac Pitblado, of Winnipeg, for the Canadian Manufacturers' Association; Robert E. Finn, for the Maritime provinces; Sidney B. Woods, for the cities of Edmonton, Alta., and Saskatoon, Sask.; and W. T. Henderson, for the city of Brantford, Ont., whose application on behalf of that city and the large industries there for removal of the discrimination resulting from the restoration on July 7 last of the full effect of the Crow's Nest Pass Agreement formed the basis of the hearing.

What complicated this rate case was the fact that the Crow's Nest Pass Agreement was the result of an act of Parliament, and this raised the question of the power of the Dominion Railway Board to do anything in the way of removing discrimination caused by a pact between the Canadian Pacific and the government of Canada. In four previous rate cases—the Pacific Coast cities case, the Regina rate case, the Manitoba case and the 15 per cent increase case, some doubt was cast upon the board's power in relation to that agreement, and in one case Sir Henry Drayton, then chairman of the board, went so far as to say that the board was bound by the Crow's Nest pact. In the present hearing Mr. Lafleur made light of those four decisions and declared that the board could not be bound by those rulings, and that it was time the board ignored what was really, in his estimation, "an obsolete piece of legislation."

In a general way the attitude of the complainants, on the one hand, and the railways on the other, are as follows: While both seemed to be agreed that the board had full power to do what the applicants asked, namely, remove the discrimination, they differed as to how that power was to be exercised. In effect, the complainants hold that the board has power to level down other rates to the Crow's Nest level, while the railways offered at the hearing to disregard the pact and restore the rates effective up to July 7 last, or failing that, to level the Crow's Nest rates up to the other level, which is virtually the same thing. This the complainants promptly and vigorously refused to permit. They demanded of the board to first remove the discrimination by levelling the other rates down to the Crow's Nest pact, and allow the railways in the meantime to appeal to the higher courts of law on the question of law and authority, but, as Mr. Symington declared emphatically, "We in the West do not want to have to wait a year or two years for a legal decision before we can get lower rates, or at least get the discrimination removed." He declared that Parliament in passing the original agreement in 1897 and in passing or authorizing the further suspension of that agreement in 1922 never contemplated such discrimination as has been caused by the Canadian Pacific (the Canadian National has had to meet those rates at competing point) in interpreting the original agreement literally by cutting the rates only on the C. P. R. lines existing in 1897, when the pact was passed, and leaving the rates up on the other C. P. R. lines which have been built since that time.

In connection with Mr. Lafleur's argument for the railways, in which he said that up to the war the Crow's Nest rates had not been a factor in the rate situation, as they were not in effect to any extent as most of the rates were considerably lower, Mr. Flintoft for the C. P. R. said that the operating expenses of his road were increased by $70,000,000 as a result of the adoption of the "McAdoo" wage award in 1918, in return for which the Canadian roads were allowed a rate increase.

A feature of the hearing was the sharp language used by Mr. Symington concerning E. W. Beatty, president of the Canadian Pacific, because the latter had delivered an address in the same week to a convention of boards of trade in Northern Ontario urging that discrimination in freight rates should be removed but that the rates should be leveled up, instead of down. Mr. Symington used warm words in scoring this speech delivered at the time when the Dominion Railway Board was hearing argument on the rates situation and when the whole matter was *sub judice*. Also, the C. P. R. came in for some strong words from Mr. McGeer, who on the last day asked for an order of the board compelling that railway to file answers to questions he had asked of them, especially in regard to costs of operation in the past two years. The board refused to make the order and suggested that Mr. McGeer confer with C. P. R. lawyers and get as much of the information as he could. "How can anyone," said Mr. McGeer, "get a case against a railway when the information regarding costs of operation is available only from that railway. Traffic conditions have changed greatly in Western Canada in the past two years, and we are entitled to know how the operating figures of the railways have been affected."

In the course of his speech at Elk Lake, Ont., to the Boards of Trade of Northern Ontario last week Mr. Beatty said:

"I believe it to be of the highest importance to the people of Canada that they should know these facts and ponder them at this time. They are not brought forward in favor of a continuation of the discriminatory rates at this moment in force. The discrimination is there, and it is not conducive to national business, but neither is it to the interest of the people of Canada that the discrimination should be removed by a leveling down of rates to a point where earnings will fall short of operating costs, interest charges, etc.; and that is the inevitable end of the road along which certain leaders would appear to be guiding us today. The result can be only a restriction of the country's railway service such as would threaten expansion and development and throw the country back for many years."

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-8, 1925, Los Angeles, Calif. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—John Wright, Westinghouse Electric & Manufacturing Co. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—Grant Williams, 1341 Railway Exchange, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago. Annual meeting, June 23, 1925, Portland, Ore.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothchild, Room 400, Union Station, St. Louis, Mo. Next convention, June 16-19, 1925, Richmond, Va.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—L. A. Stone, C. & E. I. Ry., Chicago. Annual meeting, October 14-17, 1924, Montreal, Canada.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York. Next meeting, October 6-10, Atlantic City, N. J.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamilton Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section (including former activities of American Asscciation of Freight Agents).—R. O. Wells, Freight Agent, Illinois

Central Railroad. Chicago, Ill. Next meeting, May 19-21, 1925, Kansas City, Mo.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association).—J. C Caviston 40 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents). W. A. Fairbanks, 30 Vesey St., New York.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago, Ill.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Next annual meeting, March 10-12, 1925, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electric Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York, N. Y.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Exhibit by Railway Supply Manufacturers' Association.

Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, May 25, 1925, Kansas City, Mo.

Car Service Division—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next annual convention, Oct. 21-23, 1924, Kansas City, Mo. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. L. Moorshead, Industrial Engineer, Erie, New York City. Next meeting, May 13, 1925, San Antonio, Texas.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 10-12, 1925, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., Chicago. Exhibit and Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319-21 F St., N W., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—33 W. 39th St., New York. Regular meetings 1st and 3rd Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, A. F. Stuebing, Chief Engineer, Bradford Draft Gear Co., 23 W. 43rd St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, 1310-1311 Mallers Bldg., Chicago, Ill. Biennial convention, July 20, 1925, Chicago.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—P. R. Hicks, Room 1146, Otis Bldg., Chicago. Annual meeting, February 3-5, 1925, Congress Hotel, Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual meeting, June 17, 1925, Winnipeg, Canada.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next meeting, October 20-24, Hotel La Salle, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Divisicn I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—John Nelson, Joseph E. Nelson & Sons, 3240 South Michigan Ave., Chicago. Meetings with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—R. E. Giger, 721 North 23rd St., East St. Louis, Ill Meetings, first Tuesday in month at the American Hotel Annex. St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday, January to November. Interim meetings, 2nd Thursday, February, April, June, Hotel Statler, Buffalo, N. Y.

CHICAGO CLAIM CONFERENCE.—Personal Injury Section. Parks C. Archer, General Claim Agent, Chicago & Alton R. R., 340 Harrison St., Chicago. Meets 12:30 p. m., first Monday each month, City Club, 315 Plymouth Court, Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Rookery Bldg., Chicago. Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND STEAM RAILWAY CLUB.—F. L. Frericks, 14416 Adler Ave., Cleveland, Ohio. Meetings, first Monday each month, Hotel Cleveland, Public Square, Cleveland.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C. Annual meeting, May 14, 1925, Railroad Club, New York.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—C. H. Treichel, Grand Central Station, Chicago. Regular meetings, Wednesdays, preceding 3rd Friday in month, Room 1414, Manhattan Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. B. Hutchison, 6000 Michigan Ave., Chicago. Next annual convention, May, 1925, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—F. S. Wilcoxen, Edna Brass Manufacturing Company, Cincinnati, Ohio. Meeting with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next convention, May 19-22, 1925, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—See A. R. A., (Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

MOBILE TRAFFIC & TRANSPORTATION CLUB.—T. C. Schley, 71 Conti St., Mobile, Ala. Regular dinner meetings, 6 p. m. on 2nd Thursday of each month, Battle House Hotel, Mobile, Ala.

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—J. S. Penney, T. J. Moss Tie Company, St. Louis, Mo. Next convention, 1925, Chicago.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, Nov. 11, 1924, Phoenix, Ariz.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition at convention of American Railway Engineering Association.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: E. R. Cott, Safety Agent, Hocking Valley Ry., Columbus, Ohio.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August, at 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut St., Philadelphia, Pa. Annual meeting and dinner, in second week of December, 1924.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—Joseph Sinkler, Pilot Packing Co., Peoples Gas Bldg., Chicago. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 21-23, Jefferson Hotel. Richmond, Va.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV., Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next convention, 1925, Kansas City, Mo. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—J. E. Rubley, Southern Railway Shop, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. L. Carrier, Car, Serv. Agent, Tenn. Cent. Ry., 319 Seventh Ave., North Nashville, Tenn.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, Ohio. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 605 North Michigan Ave., Chicago. Annual meeting, May 23, Edgewater Beach Hotel, Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 138 W. Madison St., Chicago, Ill.

Traffic News

The Erie Railroad on September 20 moved 33,163 freight cars of which 21,967 were loaded. This is the highest record ever made by this company for a single day.

THE MISSOURI PACIFIC has applied to the Arkansas Railroad Commission for permission to discontinue two trains operating between Gurdon, Ark., and Texarkana, two trains between McGehee and Eudora, two trains between Smackover and Camden and two between Hoxie and Knobel.

The Seaboard Air Line has applied to the Railroad Commission of Georgia for authority to discontinue the operation of a considerable number of passenger trains because of the small number of passengers making use of the trains. The statement presented to the commission shows that as compared with the year 1920 the passenger traffic of the lines affected by the application has fallen off 50 per cent and in some cases 70 per cent.

To stimulate interest in the raising and judging of dairy cattle, the Chicago & North Western in co-operation with the National Dairy Exposition to be held at Milwaukee, Wis., from September 27 to October 4, has arranged to award three prizes for each of the states in which the North Western operates. Three prizes will be awarded in Illinois, Iowa, Wisconsin, Minnesota, South Dakota, Nebraska, Wyoming and upper Michigan and one prize will be awarded in North Dakota.

Reduced railroad fares will be put into effect from all parts of California to Redding for the Sciots annual convention to be held at that place from November 10 to November 15. The railroads are the Southern Pacific, the Atchison, Topeka & Santa Fe, the Western Pacific, the Union Pacific, and the Northwestern Pacific. A 25 per cent reduction from the regular fares will be allowed on the reduced rate tickets which will be sold from November 8 to 15 with the final return limit fixed as November 18.

Railroads extending through the cotton producing districts are ready with a surplus of cars for the movement of the 1924 cotton crop and will be able to handle the shipments without delays barring unseasonable weather. In some territories there is now a heavy loading of cotton, particularly on the Illinois Central and the Yazoo & Mississippi Valley. The St. Louis-San Francisco has a surplus of suitable cars for handling cotton in Arkansas and southeast Missouri. This company has made arrangements for handling all cars received in interchange at West Memphis, Ark., during the cotton loading season by constructing several thousand feet of necessary sidings. The St. Louis-Southwestern; the Missouri Pacific; the Chicago, Rock Island & Pacific and the Southern also report cars available for cotton.

Freight Commodity Statistics

The Interstate Commerce Commission has issued its quarterly statement showing by districts and by commodities the freight tonnage transported by Class I steam railways for the quarter ended June 30, 1924. Below will be found a comparison, by general classes of commodities, with the corresponding period in 1923:

	Number of tons originated		
Classes of commodities	Quarter 30, 1923	Quarter 30, 1924	Per cent of decrease 1924 from 1923
Products of agriculture	19,625,897	19,481,051	.74
Animals and products	6,649,538	6,383,844	4.00
Products of mines	184,321,362	148,482,810	19.44
Products of forests	30,928,472	28,193,263	8.84
Manufactures and miscellaneous	73,431,893	64,411,082	12.28
All L. C. L. freight	11,651,796	10,290,033	11.69
Total	326,608,958	277,242,083	15.11
	Total tons carried		
Products of agriculture	43,648,868	43,223,051	.98
Animals and products	11,802,332	11,443,411	3.04
Products of mines	322,433,843	253,260,890	21.45
Products of forests	60,851,671	54,536,612	10.38
Manufactures and miscellaneous	142,842,050	126,812,713	11.22
All L. C. L. freight	19,249,116	17,264,993	10.31
Total	600,827,880	506,541,670	15.69

Equipment and Supplies

Locomotives

THE NITRATE RAILWAYS OF CHILE have ordered 6 Mikado type locomotives from the Baldwin Locomotive Works.

THE SUGAR PINE LUMBER COMPANY, Fresno, Cal., has ordered 1 Mikado type locomotive from the American Locomotive Company.

Freight Cars

WESTERN FRUIT EXPRESS.—See Great Northern.

THE ST. LOUIS-SAN FRANCISCO is inquiring for 400 underframes.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 500 box cars.

THE CENTRAL OF BRAZIL is inquiring through the car builders for about 450 freight cars.

THE SOROCABANA RAILWAY (Brazil) is inquiring through the car builders for 200, 30-ton box cars.

THE NEW YORK CENTRAL contemplates buying from 100 to 200 stock cars and from 100 to 200 flat cars of 40 tons' capacity.

THE UNION REFRIGERATOR TRANSIT COMPANY has ordered 200 underframes from the American Car & Foundry Company.

THE MISSOURI PACIFIC, reported in the *Railway Age* of September 6 as inquiring for 50 caboose cars, has ordered 75 from the American Car & Foundry Company.

THE NEW YORK CENTRAL.—According to press reports the New York Central contemplates buying about 7,500 freight cars; other reports place the number at about 10,000 cars. This has not been confirmed by the railroad.

THE READING COMPANY, reported in the *Railway Age* of September 13 as inquiring for 1,000 hopper cars, has placed this order with the Bethlehem Steel Company. This is in addition to the order for 1,000 gondola cars and 1,000 box cars, reported in the *Railway Age* of September 27.

THE GULF COAST LINES, reported in the *Railway Age* of September 30 as inquiring for 500 box cars, 500 automobile box cars and 250 gondola cars, has ordered the box cars from the American Car & Foundry Co., the automobile cars from the Pullman Car & Manufacturing Corporation, and the gondola cars from the Mount Vernon Car Manufacturing Company.

THE SOUTHERN RAILWAY, reported in the *Railway Age* of September 20 as inquiring for 2,500 box cars of 40 tons' capacity, 250 stock cars of 40 tons' capacity, and 250 flat cars of 50 tons' capacity—a total of 3,000 cars—has placed orders for 3,650 cars as follows: 2,000 box cars and 250 flat cars from the American Car & Foundry Co.; 1,000 box cars from the Mount Vernon Car Manufacturing Company; and 400 stock cars from the Tennessee Coal, Iron & Railroad Co.

Great Northern Authorizes $6,500,000 for Freight Cars

The Great Northern directors on September 23, authorized Ralph Budd, president, to enter into negotiations for the purchase of 2,500 additional freight cars at a cost of about $6,500,000. Announcement of this action says that a large number of automobile cars are included in this authorization. The announcement also says that "These cars are in addition to the 3,500 new refrigerator cars being built for use on the Great Northern Railway by the Western Fruit Express at its new St. Paul shops." Only 2,000 of these cars were previously reported in the *Railway Age*.

The Great Northern is now inquiring for 500 single sheathed automobile box cars, of 50 tons' capacity. This company is also inquiring for 250 ore cars of 75 tons' capacity, as was reported in the *Railway Age* of September 27.

This company, reported in the *Railway Age* of September 20 as inquiring for 600 underframes, has ordered this equipment from the Pullman Car & Manufacturing Company.

Passenger Cars

THE BALDWIN LOCOMOTIVE WORKS is inquiring for one narrow-gage coach body and 2 standard gage coach bodies, with rear trucks.

THE LOUISIANA & NORTH WEST has ordered from the J. G. Brill Company one combination passenger and baggage gasoline motor car.

THE LONG ISLAND.—According to reports the Long Island may buy 40 steel motor passenger cars for electric service. This information has not as yet been officially confirmed.

Iron and Steel

THE NEW YORK CENTRAL is inquiring for 800 tons of structural steel.

THE LEHIGH VALLEY is inquiring for 350 tons of structural steel.

THE ATLANTIC COAST LINE is inquiring for 200 tons of structural steel.

THE LEHIGH VALLEY has received bids on about 3,200 tons of steel for bridges.

THE CENTRAL OF NEW JERSEY has ordered 150 tons of steel from the Shoemaker Bridge Company.

THE FLORIDA EAST COAST has ordered about 15,000 tons of rail from the Tennessee Coal, Iron & Railroad Co.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 10,000 tons of rail from the Bethlehem Steel Corporation.

THE DETROIT, TOLEDO & IRONTON is inquiring for 3,000 tons of structural steel for its car shop at Flat Rock, Mich.

THE PENNSYLVANIA has received bids on 300 tons of bridge steel. A contract has been given to the McClintic-Marshall Company for 200 tons of steel.

THE ILLINOIS CENTRAL has ordered 430 tons of structural steel for the first section of catenary bridges required for electrification in Chicago from the Continental Bridge Company.

THE ATLANTIC COAST LINE has ordered about 20,000 tons of rail from the Tennessee Coal, Iron & Railroad Co. and 10,000 tons from the Maryland Steel Company. This company has also placed an order for 200 tons of steel for a bridge.

THE ILLINOIS CENTRAL has ordered 8,000 tons of rail from the United States Steel Corporation, 4,000 tons from the Inland Steel Company and 3,000 tons from the Tennessee Coal, Iron & Railroad Company in addition to the 60,000 tons previously ordered.

Machinery and Tools

THE TENNESSEE COAL, IRON & RAILROAD CO. has placed an order for a 36-in. by 8-ft. planer.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is inquiring for two five-foot radial drills.

THE DELAWARE, LACKAWANNA & WESTERN has placed orders for 2 car wheel borers and 2 axle lathes.

THE LEHIGH & NEW ENGLAND has ordered from the Industrial Works, one 150-ton non-propelling steam wrecking crane and one 20-ton steam locomotive crane, complete with generating set, lifting magnet and clamshell bucket.

Miscellaneous

THE SIAM STATE RAILWAYS will receive bids until December 31 at the office of the commissioner general, Bangkok, Siam, for the supply of accessories to include laminated springs, axle boxes and axle guards for goods rolling stock. C. O. Sandberg, 100 Broadway, New York, has specifications and drawings.

Supply Trade News

Carl Gebuhr has been appointed manager of sales of the **Gidding & Lewis Machine Company,** with headquarters at Fond du Lac, Wis.

The Cameron & Barkley Co., Charleston, S. C., has been appointed district representative in the Charleston district for the **Central Iron & Steel Company,** Harrisburg, Pa.

The Standard Railway Equipment Company and the **Union Metal Products Company** have moved their Chicago office to room 1422 Strauss building, 310 South Michigan avenue, Chicago.

William M. Ryan, president of the Youngstown Steel Car Company, Niles, Ohio, has resigned following his election as president of the **Ryan Car Company,** Chicago, as reported in the *Railway Age* of September 20.

The Chausse Oil Burner Company, Elkhart, Ind, has appointed **E. R. Mason,** Grand Central Terminal building, New York, **The Direct Sales Company,** Manhattan building, Chicago, and the **Railroad Signal Supply Company,** Hackney building, St. Paul, Minn., sales representatives for the sale of kerosene torches and switch heaters.

The firm of **Condron & Post,** consulting and designing engineers, 53 W. Jackson boulevard, Chicago, has been formed by **Theodore L. Condron** and **Chester L. Post,** to continue the engineering practice carried on by them under the name of the Condron Company since 1912 and by Mr. Condron since 1901. Attention will be given to consultation and advice with other engineers, architects and investors regarding preliminary or advance plans for steel or reinforced concrete buildings and other structures, and also to investigations, reports and testimony in connection with improvements, arbitrations and litigation.

The Detroit Machine Tool Company, Detroit, Mich., manufacturers of centerless grinding machines, has been consolidated with the **Norton Company,** Worcester, Mass., manufacturers of grinding wheels and grinding machines. No change has been made in the business policy of the Detroit Machine Tool Company. **Harold W. Holmes** will continue as president and general manager and the following officers and directors of the Norton Company have been added to the board of directors of the Detroit Machine Tool Company: **Clifford S. Anderson,** vice-president, **Henry Duckworth,** treasurer, **William LaCoste Neilson** and **Aldus C. Higgins.**

Correction

A. J. Pizzini, president of the Railway Improvement Company, New York, has also been elected president of the **Waugh Equipment Company,** instead of A. J. Tizzini, as was reported in the *Railway Age* of September 20, through a typographical error.

Trade Publications

THOR PNEUMATIC TOOL CATALOG.—What may be conservatively stated as an outstanding achievement in catalog preparation has been made by the Independent Penumatic Tool Company, Chicago, in the publication of its new catalog No. 13, devoted to Thor pneumatic tool repair parts. This catalog is said to be the first of its kind ever published since, in addition to showing each part that enters into the construction of Thor pneumatic tools, complete information is given regarding the interchangeability of parts from one tool to another. All the parts that interchange, as well as those that do not, are shown in the catalog and by means of this information it may often be possible to keep a tool in service which would otherwise have to lie idle awaiting repair parts from the factory. In addition, a study of the catalog will afford the users of Thor pneumatic tools a better understanding of the various tool parts, which should prove an important aid in enabling them to secure longer and more continuous pneumatic tool service and to minimize the parts which must be carried in stock.

Railway Construction

BALTIMORE & OHIO.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a freight house at Sandusky, Ohio. A contract has also been awarded to Joseph E. Nelson & Sons for the installation of water supply facilities at Ottawa, Ohio, to cost approximately $45,000, as reported in the *Railway Age* of August 9.

BOSTON & ALBANY.—This company has awarded a contract for some building work at West Springfield, Mass., to the Casper Ranger Construction Company, Holyoke, Mass.

CHESAPEAKE & OHIO.—This company, reported in the *Railway Age* of August 30 as calling for new bids for the construction of a passenger station at Ashland, Ky., has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a new station and baggage room, to cost approximately $500,000. This work is part of a general improvement program at Ashland involving a total expenditure of $2,500,000. The new station will be a three-story brick building, with Bedford limestone trimming. The main portion of the structure will be 168 ft. long by 52 ft. wide, and the baggage room which will form an adjoining wing, will be 46 ft. long by 47 ft. wide, making the total length 214 ft. by about 50 ft. Three train platforms, each 1,000 ft. long, will be provided, accessible only through subways. The work will be completed in about a year.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to Peppard & Burrill, Minneapolis, Minn., for the construction of an ore dock at Escanaba, Mich., to cost approximately $2,500,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is calling for bids for the construction of a coach shop at Shawnee, Okla.

DETROIT, TOLEDO & IRONTON.—This company plans the construction of a roundhouse and repair shop and a large yard at Lima, Ohio.

ERIE.—This company has awarded a contract to Acken-Shapiro, Inc., New York, for the construction of a station at Englewood, N. J., to cost approximately $65,000, noted in the *Railway Age* of August 18. A contract for the construction of a chimney at the company's new powerhouse at Jersey City, N. J., has been awarded to the Alphons Custodis Chimney Construction Company, New York. A contract for coal pulverizing equipment for the same powerhouse has been awarded to the Economy Equipment Company and for coal handling equipment to the Beaumont Machinery Company. Work has been started on a small engine terminal at South Paterson, N. J., in connection with the grade crossing elimination work which is being undertaken there.

ILLINOIS CENTRAL.—This company is calling for bids for the construction of a freight station at Harvey, Ill., and for the construction of a steel coaling station at Pinckneyville, Ill.

ILLINOIS CENTRAL.—This company has awarded a contract to the Railroad Water & Coal Handling Company, Chicago, for the construction of a 600-ton coaling station at Dawson Springs, Ky., reported in the *Railway Age* of September 6.

NORTHERN PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension of 15 miles in Mason county, Wash., including 8 miles of logging road to be acquired.

RIO GRANDE CITY & NORTHERN.—The Interstate Commerce Commission has denied this company's application for a certificate authorizing the construction of a line from Samfordyce to Mirando City, Tex., 85 miles. The commission recently authorized the Rio Grande City to build a line from Samfordyce to Rio Grande City.

RUTLAND.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the installation of an electric cinder conveyor at Malone, N. Y.

RUTLAND.—This company has under construction a 750 hp. central boiler plant at Rutland, Vermont; estimated cost $156,000. The building contractor is Henry R. Kent & Company, Rutherford, N. J.; boiler contractor, E. Keeler Company, Williamsport, Pa.; piping contractor, John W. Danforth Company, Buffalo, N. Y. A contract for a 150-ft. radial brick chimney has been awarded to the American Chimney Corporation, New York. The balance of work is being done by company forces. The company has under way an extension of five stalls to its enginehouse at Rutland. The new length of stalls will be 100 ft. The estimated cost is $52,000. The building contractor is the C. A. Dodge Company, Cambridge, Mass. The balance of the work is being done by company forces.

SEABOARD AIR LINE.—This company has awarded a contract to C. V. York, Raleigh, N. C., for a brick (exterior) passenger station at McClenny, Fla. The company will build an industrial track one mile long, near Charleston, S. C.

ST. LOUIS-SAN FRANCISCO.—This company is calling for new bids for the construction of a stucco passenger station at Sikeston, Mo.

ST. LOUIS SOUTHWESTERN.—This company has awarded a contract to Mote & Baldwin, Dallas, Tex., for the construction of a passenger station at Sulphur Springs, Tex.

UNION PACIFIC.—This company contemplates the construction of a one-story power plant at Huntington, Ore., to cost approximately $25,000.

Progress of Improvement Work on the Long Island—Bids on Shops to Be Requested Soon

The status of the work being done in connection with the extension of the Long Island Railroad's electric service to Babylon, on the Montauk division is as follows: Third rail has been laid to a point east of Merrick. Up to the present time about one-third of the third rail, including the long ties, has been laid. Excavations have been dug for all six sub-stations, and the foundation walls have been built. At Babylon the steel work has been erected, and the concrete walls are now being poured. All the wooden poles and some of the steel poles for carrying the transmission lines have been erected. Foundations for the remaining steel poles to be put up are being built. Transmission wires have been strung from Lynbrook to Wantagh, and east from Copaigue to Belmont Junction, west of Babylon.

Dredging has been completed for the two new float bridges now in the course of erection in Long Island City. Some 560 tons of steel will be required for these float bridges. Foundation work for the tracks and the float bridges is about 20 per cent completed, while the electrical machinery for the operation of the float bridges is about 50 per cent. completed. In connection with the extension of the Long Island City freight yard, about 10 per cent of the new track work has been completed. It is estimated that the cost of improving the freight facilities in Long Island City will be over $1,000,000.

Contractor Ernest L. Smith, who is erecting the new stations at Manhasset and Great Neck, reports that the work is progressing rapidly. At Manhasset the foundations are completed and the brick work is laid up to the window sills. Foundations have been completed for the new station at Great Neck, and the contractor has started laying brick and setting the steel framing for the first floor.

The footbridge which the Transit Commission ordered the company to erect at Lancaster avenue, Auburndale, was recently completed. The steel and concrete bridge ordered by the Transit Commission to be built over Ashland street, Brooklyn Manor, is about 13 per cent completed. This bridge, which will cost approximately $104,000, will be 60 ft. long and 44 ft. wide, with a clearance of 14 ft. over the highway. A highway bridge is being erected at Park Lake South, Richmond Hill, at a cost of about $41,000.

This steel and concrete bridge will be 102 ft. long and 52 ft. wide, and will have a clearance of 25 ft. above the present tracks of the railroad.

Plans and specifications have been completed covering extensions to the motor repair shops at Morris Park, and contractors will shortly be asked to bid on this work.

Railway Financial News

BALTIMORE & OHIO.—*Equipment Trusts.*—Kuhn, Loeb & Co., Speyer & Co. and the National City Company have purchased, subject to the approval of the Interstate Commerce Commission, and have placed privately $9,504,000 Baltimore & Ohio 4½ per cent equipment trust certificates maturing in semi-annual instalments from May 1, 1925, to November 1, 1935. These equipment trust certificates are to be issued under an agreement with the National Railway Service Corporation and will replace $9,966,000 trust certificates of the National Railway Service Corporation now outstanding against Baltimore & Ohio equipment purchased in 1920 and 1921 and bearing interest partly at the rate of 7 per cent and partly at the rate of 6 per cent per annum, which mature or are to be called for redemption on November 1, 1924. The United States Government holds $3,986,000 of the certificates to be redeemed.

FLORIDA EAST COAST.—*Bonds.*—J. P. Morgan & Co., the First National Bank and the National City Company are offering $15,000,000 first and refunding mortgage 5 per cent bonds, due 1974, at 96 to yield 5.22 per cent.

DENVER & RIO GRANDE WESTERN.—*Interest.*—As the receiver has not provided funds for the October 1 interest upon the first consolidated mortgage 4 per cent bonds of the Rio Grande Western, arrangements to provide funds to pay this interest have been made by Kuhn, Loeb & Co., and the Equitable Trust Company, reorganization managers.

GREAT NORTHERN.—*Bonds.*—Announcement is made that temporary general mortgage 5 per cent bonds, series C, may now be exchanged at the company's office, 32 Nassau street, New York, for definitive bonds in coupon form or full registered bonds—the latter in denominations of $1,000, $5,000, $10,000 and $50,000, at the option of the holder.

NEW YORK CENTRAL LINES.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of $20,955,000 of New York Central Lines equipment trust certificates to be sold at not less than 96.89.

OHIO RIVER & WESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon that part of its line from Woodsfield to Lawton, Ohio, 60 miles.

PARIS-LYONS-MEDITERRANEAN.—*Bonds Sold.*—Goldman, Sachs & Co., Bankers Trust Co., Lehman Brothers, Halsey, Stuart & Co., Inc., and the Union Trust Co. of Pittsburgh have sold at 93¼ and interest to yield more than 7.55 per cent to maturity $20,000,000 7 per cent external sinking fund gold bonds. The proceeds will be used to retire floating indebtedness and to pay for improvements already contracted for.

The bonds will mature September 15, 1958. The issue is redeemable only as a whole on or after September 15, 1932, at 103 and accrued interest except for sinking fund. The issue will have the benefit of graduated annual sinking fund payments, beginning with $248,000 on September 15, 1931, and progressively increasing to a maximum of $1,540,000. This sinking fund is calculated to retire the entire issue by maturity through purchases of the bonds at not to exceed 100 and accrued interest, or if not so obtainable by annual drawings at 100 and accrued interest.

PENNSYLVANIA.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $15,750,000 of 4½ per cent equipment trust certificates which have been sold to Kuhn, Loeb & Co., at 97. These certificates are being distributed privately at prices for the several maturities which average an income yield of 4.70 per cent for equal amounts of all maturities. They will be secured by new standard steel equipment costing not less than $21,000,000 of which 25 per cent in cash is to be paid by the railroad company.

ST. LOUIS & OHIO RIVER.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $1,446,500 of stock to be disposed of at par to the Aluminum Company of America.

ST. LOUIS-SAN FRANCISCO.—*Preferred Dividend.*—The directors have declared an initial quarterly dividend of $1.50 on the preferred stock, payable November 1 to stock of record October 15.

SUNCOOK VALLEY.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire a line of 4½ miles from Pittsfield to Center Barnstead, N. H., from the Boston & Maine.

VIRGINIAN & WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of $1,352,000 of first mortgage 5 per cent bonds to be delivered to the Virginian at not less than 95 in payment of advances.

WEST VIRGINIA MIDLAND RAILWAY.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority for the operation of a line formerly operated by the West Virginia Midland Railroad from Holly Junction to Webster Springs, W. Va.

Dividends Declared

Baltimore & Ohio.—Common, 1¼ per cent, quarterly; preferred, 1 per cent, quarterly; both payable December 1 to holders of record October 11.

Belt Railroad & Stock Yards, Indianapolis.—Common, 2 per cent, quarterly; preferred, 1½ per cent, quarterly; both payable October 1.

Delaware, Lackawanna & Western.—3 per cent, quarterly, payable October 20 to holders of record October 4.

Georgia Railroad & Banking.—2½ per cent, quarterly, payable October 15.

Meadville, Conneaut Lake & Linesville.—2 per cent, payable October 1 to holders of record September 20.

New London Northern.—2¼ per cent, quarterly, payable October 2.

Norfolk & Western.—Adjustment preferred, 1 per cent, quarterly, payable November 19 to holders of record October 31.

Northern Pacific.—1¼ per cent, quarterly, payable November 1 to holders of record October 3.

Northern Railroad of New Hampshire.—1½ per cent, quarterly, payable October 1 to holders of record September 8.

Norwich & Worcester.—Preferred, 2 per cent, quarterly, payable October 1.

Western Pacific.—Preferred, 1½ per cent, quarterly, payable October 20 to holders of record October 8.

Trend of Railway Stock and Bond Prices

	Sept. 30	Last Week	Last Year
Average price of 20 representative railway stocks	71.23	71.00	59.60
Average price of 20 representative railway bonds	88.10	88.46	81.52

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Taken Before He Had His Reverses

Railway Officers

Executive

Joseph Pierce Ripley, whose election as vice-president of the International-Great Northern, with headquarters at New York, was announced in the *Railway Age* of September 20, was born on March 29, 1889, at Chicago (Oak Park), Ill., and was graduated from Cornell University in 1912. He entered railway service in June, 1906, as an axeman in the construction of the Belen cut-off of the Atchison, Topeka & Santa Fe and in May, 1907, he became a rodman on the Grand Trunk Pacific in construction work near Edmonton, Alta. On January 1, 1908, he became transitman of the same company at Skeena River, B. C., and in September of the same year he entered Cornell University. He obtained a month's leave of absence in January, 1909, to make special locomotive tests on the Atchison, Topeka & Santa Fe from Chicago to Los Angeles, Cal. In May, 1909, he became transitman and levelman on the Chicago, Rock Island & Pacific near Howe, Okla., and in June of the next year he became a machinists' apprentice for the Santa Fe at Topeka, Kan. He was granted another leave of absence from college in January, 1911, to make locomotive tests on the Santa Fe from Seligman, Ariz., to Needles, Cal., and in June, he returned to the same company as a machinists' apprentice. Mr. Ripley entered the service of the J. G. White & Co., in June, 1912, and held various positions in the operating department of the company which operates the Philippine Railway and the Pacific Railway of Nicaragua. In April, 1922, he became secretary of W. A. Harriman & Company of New York. He is also a director of the New Orleans, Texas & Mexico.

Financial, Legal and Accounting

Clifford S. Beattie, claims attorney for the Lehigh & Hudson River at Warwick, N. Y., has been appointed general counsel, with the same headquarters, succeeding John J. Beattie, deceased.

R. I. Bodkin, freight claim agent of the Canadian Pacific, with headquarters at Calgary, Alta., has been transferred to Vancouver, B. C., succeeding **James Black,** who has retired after 35 years of service with the Canadian Pacific.

E. M. Davis, assistant general solicitor of the Pennsylvania at Pittsburgh, Pa., has been appointed assistant general counsel, with the same headquarters. **H. Z. Maxwell,** assistant solicitor, has been appointed assistant general solicitor, legal department, with headquarters at Philadelphia, Pa.

F. Wenter, Jr., general claim agent of the Chicago & North Western, with headquarters at Chicago, has been appointed also general claim agent of the Chicago, St. Paul, Minneapolis & Omaha, with the same headquarters, the claims departments of the two roads having been consolidated. **G. T. Joyce,** general claim agent of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been appointed assistant general claim agent of the Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha, with the same headquarters.

Operating

R. A. Brimm and **C. C. Chapman** have been appointed inspectors of transportation of the Missouri Pacific, both with headquarters at St. Louis, Mo.

A. E. Warren, general manager of the Canadian National, Western Lines, has established an office at Vancouver, B. C., in addition to his present office at Winnipeg, Man.

W. R. Olive, terminal trainmaster of the Seaboard Air Line at Hamlet, N. C., has been appointed assistant trainmaster, with the same headquarters. The position of terminal trainmaster at Hamlet has been abolished.

J. S. Matson, general superintendent of the Bessemer & Lake Erie at Greenville, Pa., has been appointed assistant to the general manager, with the same headquarters. **W. M. Johnson,** superintendent at Greenville, has been appointed general superintendent, with the same headquarters, succeeding Mr. Matson. **T. F. Williams,** trainmaster, has been appointed assistant superintendent, also with headquarters at Greenville.

E. Y. Graves, supervising agent of the Seaboard Air Line, has been appointed superintendent of stations and transfers, with headquarters at Norfolk, Va. The position of supervising agent has been abolished. **L. M. Parmley** has been appointed supervisor of yards and terminals of the Northern district, with headquarters at Norfolk. **W. C. Kirby** has been appointed supervisor of yards and terminals of the Southern district, with headquarters at Jacksonville, Fla.

Traffic

T. H. Gurney, assistant general passenger agent of the Chesapeake & Ohio, with headquarters at Cincinnati, Ohio, has been promoted to general passenger agent, with the same headquarters, a newly created position. **George Coombs** has been appointed assistant general passenger agent, with headquarters at Cincinnati, succeeding Mr. Gurney.

Mechanical

L. P. Ligon, inspector of shops and equipment of the Norfolk & Western, has retired recently, after having been in the service of the company for about 50 years.

D. M. Raymond, car foreman of the Union Pacific at Green River, Wyo., has been promoted to general car foreman, with jurisdiction over the car and electric departments at Council Bluffs, Iowa, and Omaha, Nebr. Mr. Raymond entered the service of the Union Pacific in the bridge and building department at Laramie, Wyo., in 1908, and a year later entered the mechanical department. He subsequently served as a car repairer, inspector, head inspector and assistant foreman. On September 1, 1921, he was appointed car foreman at Green River, Wyo., and remained in that position until his recent promotion to general car foreman.

Purchasing and Stores

Clyde Cocke, assistant purchasing agent of the Norfolk & Western, with headquarters at Roanoke, Va., has been appointed purchasing agent, succeeding J. H. Clemmitt, deceased. Mr. Cocke was born on July 13, 1893, and entered the service of the Norfolk & Western as a messenger boy in the summer of 1909. The following winter he attended the National Business College in Roanoke, returning in June, 1910, to the Norfolk & Western as a clerk in the purchasing department. In April, 1917, he was furloughed for military service and after two years of service overseas, he resumed his duties in the purchasing department. In August, 1922, he was made chief clerk to the purchasing agent, and in April of this year he was promoted to assistant purchasing agent, which position he held until the time of his promotion.

Obituary

O. E. Jenkins, division passenger agent for the New York Central at Syracuse, N. Y., died recently at his home in that city, at the age of 66.

THE ILLINOIS CENTRAL is making an effort to encourage interest in diversified farming by inserting an advertisement in newspapers along its lines calling attention to the fact that many farmers are insuring themselves against the danger of losses by diversifying their crops. The article shows that farming has undergone great changes in recent years and that intensive methods must be used to make farming profitable. This company also offers the services of the men in its development bureau to co-operate with farmers in the territory of the road in aiding them to decide the kind of crops and livestock adapted to their farms.